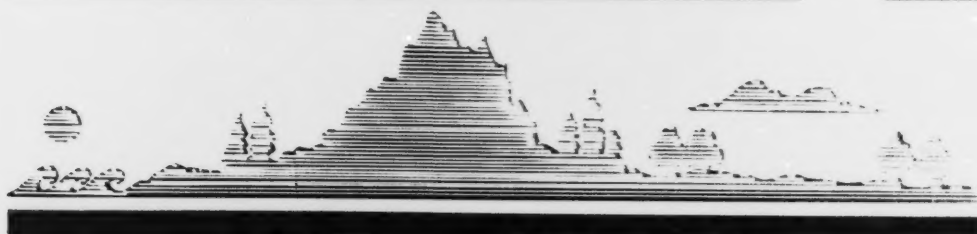
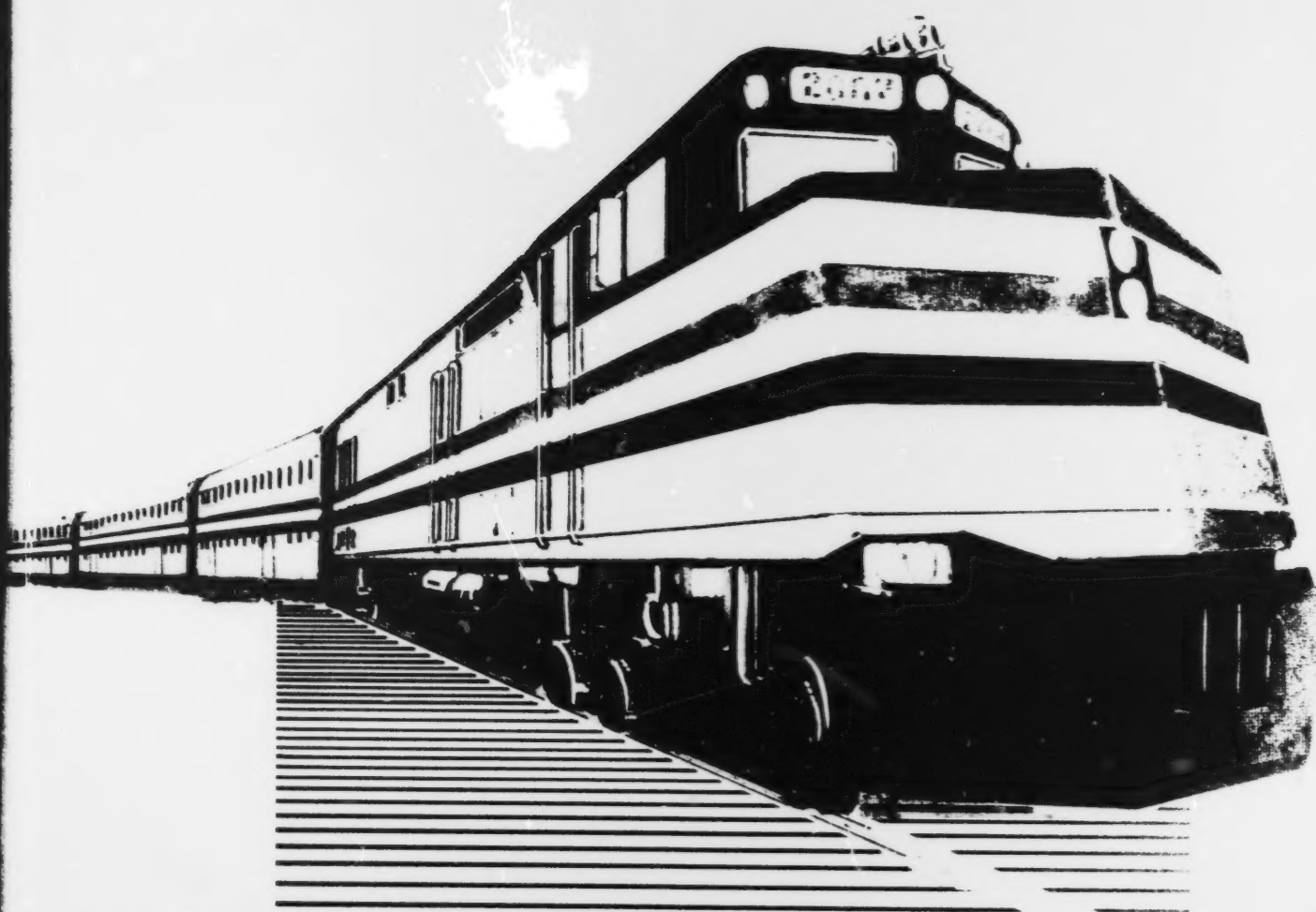

Western Transcontinental Railway Passenger Service:

Market Opportunities and Requirements
for Modernization



85-2860/

WESTERN TRANSCONTINENTAL RAILWAY PASSENGER SERVICE:
MARKET OPPORTUNITIES AND REQUIREMENTS FOR MODERNIZATION

Prepared for
ALBERTA ECONOMIC DEVELOPMENT
and
ALBERTA TOURISM AND SMALL BUSINESS

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EVERETT JOHNSTON AND ASSOCIATES LTD.

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FOREWORD

This report presents the results of a comprehensive study of the prospects of modernizing western transcontinental railway passenger services.

The study was commissioned by the Alberta Department of Economic Development and the Alberta Department of Tourism and Small Business to provide information necessary to help ensure that the province's interests in effective passenger transportation and tourism are well served.

The study's main objectives were: to determine the most efficient and economical means of modernizing the transcontinental passenger rail services passing through Alberta; to prepare service designs which would satisfy the long-term requirements of Albertans and others; to determine the marketing and management requirements necessary to achieve modernization; and, in general terms, to estimate the economic spin-off benefits of such services for Alberta and Canada.

The opinions expressed in this report are, of course, those of the authors and do not necessarily represent the official views of the departments concerned or of the Government of Alberta.

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EXECUTIVE SUMMARY

Introduction

Western transcontinental passenger rail services, as they are currently operated, are now largely obsolete, both technically (e.g., equipment failures, especially due to archaic steam systems) and conceptually (e.g., accommodations and related services are positioned for the marketplace of the 1920's or, at best, the 1950's).

Despite these liabilities, traffic between 1972 and 1981 was surprisingly steady and fell substantially only in 1982 after the "Super Continental" was discontinued. Load factors on an annual basis have been relatively high (averaging 70 per cent in 1983) and extremely high during the summer seasons, when traffic levels are limited by capacity. However, despite the train's apparent popularity with certain segments of the travel market, we feel that continued operation without significant modernization is likely to lead to traffic deterioration and/or further increases in losses. We doubt the willingness of the Canadian public to subsidize indefinitely over two-thirds of the costs of these services or, in other words, to permit non-commercial objectives to be the dominant justification for taxpayer support.

In 1971, 40 per cent of western transcontinental costs were covered by passenger revenues and a loss of \$45.5 million was incurred by CN and CP. In 1980, VIA's deficit on these services was \$115 million. This deficit rose to \$152 million in 1983, despite the significant cuts in 1981, and the portion of cost covered by passenger revenue fell to only 24 per cent.

The high cost of western transcontinental services is at least partly due to VIA's accounting procedures which allocate depreciation (including the new LRC corridor equipment) and overhead costs on a car-kilometre

basis. An alternative allocation might result in a lowering of costs allocated to these services by roughly \$30 million. Also, railway charges to VIA reflect a larger proportion of fully-allocated cost than is the case for Amtrak. If Amtrak's approach were adopted, railway charges might be reduced by an amount in the range of 10 to 20 per cent. However, even with these changes, cost recovery under present operating and management conditions would increase only to roughly 30 per cent.

Several attempts have been made to "rationalize" transcontinental service -- in the early 1970's, in 1976/77 and in 1981. Unfortunately, most of these attempts reflected a passive approach to train service, matching capacity to existing demand at lowest accounting costs. This orientation is sometimes appropriate marketing strategy, but much of the transcontinental rail market appeal is related to the quality of the service it offers rather than to pure transportation.

The CTC's Preferred Plan and Final Plan of 1977 pointed to certain requirements for modernization, including market research, more effective procedures, and upgrading of equipment, but these recommendations have not been actively pursued. For example, although VIA has a five-year budget process, we found no evidence that the crown corporation has developed a formal marketing plan for western transcontinental service or even a set of marketing strategies. VIA does, however, do some fairly-extensive marketing research but the results of these studies do not seem to be linked to VIA's corporate planning and decision making. In short, in the seven years since the CTC's Final Plan, VIA has yet to define, analyze and articulate its position -- or its future -- in the western transcontinental market place.

Market Analysis

Much of the available market information we found concerns existing, not potential, customers of transcontinental service. Available traffic data indicate that, while the highest carryings are over the Rocky Mountains segment, existing traffic is spread relatively evenly across the system. The average trip is about 1,200 km, but this figure disguises a mix of much longer trips with shorter (within-region) trips (e.g., Winnipeg-Calgary).

Travellers reflect a variety of backgrounds and characteristics, but there is a somewhat larger-than-average proportion of citizens in the older age groups now travelling on the trains. The market includes both the pure transportation and tourism components, although the tourism value of the train is likely of primary significance. A significant portion of the market is price-sensitive, but a variety of service attributes (including schedule length and reliability) are also important. Good quality sleeping and meal car service and through-train or through-car service are essential to develop the potential domestic and international tourism market.

It appears that there is a relatively small but numerically significant segment of the overall travel market that wants something different than that offered by the auto, air and bus modes. Consequently, we do not expect that air or bus deregulation in Canada will have much impact on domestic demand for transcontinental train travel. The tourism markets that we judge to have the highest potential are the domestic Canadian market, the United States in the short-run and Japan in the long-run -- provided that an efficient, reliable, attractive and well-positioned rail service is offered.

High traffic peaking in the summer months results in a large fleet of equipment, part of which operates for only 2-4 months a year. While it has been suggested in some quarters that service be tailored to the off-peak, the summer peak offers a sizeable portion of total transcontinental revenue (both higher traffic and higher fares during the summer season).

Service Alternatives

The specific alternatives presented in this study reflect three major scenarios: (1) continuation of the "Existing" approach; (2) "Limited Change" within existing institutional and conceptual boundaries; and (3) "Major Change" effected by new concepts and perhaps new organizations. These scenarios are summarized in Figure A and combine both market and cost impacts on service performance.

Equipment alternatives include rebuilding existing cars (a stop-gap measure), replacing them with new single-level cars (either in existing configuration or with high-density sleeping accommodation), or replacing them with bi-level cars (high-density coaches and either existing density or high-density sleeping space). Table A shows the superiority of the bi-level alternative in reducing overall costs. With bi-level equipment, and excluding savings from motive power replacement, costs for the existing service could be reduced by as much as \$23 million per year (after deduction of equipment capital costs). Also, increases in traffic could more readily be accommodated by the higher-capacity trains, reducing the need for additional cars or even trains in peak periods and hence avoiding additional train-related costs. New equipment could be implemented in 4-6 years, allowing 1-2 years for specifications and adaptation of existing designs (including market research required to specify interiors and 3-4 years for manufacture).

FIGURE A

SCENARIO DEFINITIONS

EXISTING APPROACH TO TRANSCONTINENTAL SERVICE:

1. Continue to use existing equipment, rebuilt or refurbished, as required. Maintenance savings are offset by capital inputs.
2. No change in cost structure.
3. Despite improvement in reliability due to head-end power conversion, traffic weakens by 30 per cent by mid-1990's under this scenario.
4. As cars become mechanically unfit, service cutbacks continue with eventual discontinuance.

LIMITED CHANGE:

1. Acquire new bi-level equipment of the Superliner or UTDC-Can Car types, resulting in greater reliability, cost savings and improved marketability.
2. Decisions largely within existing institutional framework.
3. Incremental efficiencies -- better control of maintenance costs, better on-time reliability, shorter schedules, adjustment of VIA on-train manning, etc.
4. Traffic increases by 30 per cent by mid-1990's under this scenario.

MAJOR CHANGE:

1. Acquire new bi-level equipment of the Superliner or UTDC-Can Car types.
2. Fundamental changes in operating philosophy, perhaps requiring new organization.
3. New bi-level equipment, as for "Limited Change"; faster schedules.
4. New approach to railway contracting, incentives and penalties.
5. Meal service contracted to private sector, level of service offerings tailored to the requirements of the target market segments.
6. Overall costs better controlled and cost base for railway payments lowered, but incentives potentially increasing net payments.
7. Traffic increases by 100 per cent by mid-1990's.

TABLE A

POTENTIAL COST SAVINGS FROM PASSENGER CAR

REBUILDING OR REPLACEMENT

(millions 1983 \$)

	<u>Capital Required</u>	<u>Annual* Equivalent</u>	<u>Annual Saving</u>	<u>Net Saving</u>
Rebuild Existing Fleet	\$122.5	\$13.9	\$12.0	(\$1.9)
Replace with New Single Level Cars				
(a) One-for-one	\$262.5	\$20.1	\$12.0	(\$8.1)
(b) High density sleepers	\$230.0	\$17.5	\$20.9	\$3.4
Replace with New Bi-Level Cars				
(a) 30% capacity increase	\$229.6	\$17.5	\$32.9	\$15.4
(b) High density sleepers	\$208.0	\$15.9	\$38.5	\$22.6

*Interest at 6 per cent; amortization 12 years for rebuilt cars, 25 years for new cars; 10 per cent salvage value.

Financial and indirect economic effects of service modernization have been estimated for four routes, with new bi-level equipment (and new motive power) for the "Limited Change" and "Major Change" scenarios. Services considered included the "Canadian" (Montreal/Toronto-Vancouver), the "Canadian" and "Super Continental" (including Winnipeg-Vancouver service on the northern CN route), and two supplementary "transmountain" services which might be justified by future traffic growth. The financial results shown in Table B indicate significant improvements for transcontinental services in cost recovery, particularly for the "Major Change" scenario. Although cost recovery is shown to approach 50 per cent (compared to only 24 per cent currently), a better cost recovery target of 70 per cent is not unreasonable with, for example: adjustments in pricing to maximize revenue, adjustments in off-peak service to match demand more closely, introduction of higher capacity sleepers, and further refinement of costing procedures.

TABLE B

FINANCIAL RESULTS FOR MODERNIZED WESTERN TRANSCONTINENTAL SERVICES

	<u>Loss (millions 1983 \$)</u>	<u>Revenue/Cost Ratio</u>	<u>Loss/Pass.-km (\$)</u>
Existing Approach			
A. Canadian	109.0	.22	.23
B. Canadian/Super Cont.	190.0	.25	.20
Limited Change			
A. Canadian	104.3	.35	.12
B. Canadian/Super Cont.	198.3	.37	.11
Major Change			
A. Canadian	93.8	.47	.07
B. Canadian/Super Cont.	189.4	.48	.07

Analysis of cost savings in the "Major Change" scenario indicates that new equipment contributes about one-third of such savings while new marketing and management contributes two-thirds. While subsidies will not be eliminated by modernization, a much larger market will be reached, resulting in increased effectiveness of public expenditure.

Table C shows the aggregate value of tourism income and equipment manufacturing activity stimulated by western transcontinental services in comparison with financial losses. The figures do not directly indicate the economic benefits of passenger rail services as compared to the other types of expenditures, but they do show that the rail services do have considerable leverage in generating economic activity. Rail service losses are a relatively low proportion of such activity and, for a major modernization program featuring bi-level equipment, could be as low as seven per cent of stimulated economic activity (three per cent at 70 per cent cost recovery).

While much of our effort has been directed to examination of specific service alternatives, progress in modernizing western transcontinental services will require attention to general questions concerning the management and organization of railway passenger services in Canada. First, existing practices do not reflect a commercial orientation to rail passenger service. For example, the contracts between VIA and CN/CP ensure coverage of long-run variable costs, regardless of railway performance and its impact on customer service levels. Second, VIA seems to be organizing primarily for Quebec-Windsor Corridor service, with western and other services operated as "social obligations" not to be aggressively-marketed. In this regard, it is not clear whether VIA is sufficiently interested in, and committed to, effective western transcontinental service to pursue the more significant changes that we have considered.

TABLE C

**COMPARISON OF ANNUAL FINANCIAL RESULTS AND STIMULATED
ECONOMIC ACTIVITY***

(Millions 1983 \$)

	Existing Service 1983	<u>Scenarios for Mid-1990's Operations:</u>		
		<u>"Existing Approach"</u>	<u>"Limited Change"</u>	<u>"Major Change"</u>
<u>The "Canadian"</u>				
Financial Loss	117.4	109.0	104.3	93.8
(\$ millions)				
Stimulated Economic Activity**				
(\$ millions)	878	639	971	1,343
Loss as Per Cent of Stimulated Activity	13.4	17.1	10.7	7.0
<u>The "Canadian" and the "Supercontinental"</u>				
Financial Loss	--	190.9	198.3	189.4
(\$ millions)				
Stimulated Economic Activity**				
(\$ millions)	--	1,285	2,041	2,876
Loss as Per Cent of Stimulated Activity	--	14.9	9.7	6.6

* Consists of tourism income and railway equipment activity generated

** Sum of activity for tourism and railway industries
(columns 3 and 4 in Table 6-7 in the main body of the report)

Despite VIA's existence for some six years, there is no evidence of a coherent, specific, marketing strategy, either within VIA or the Federal Government for repositioning and modernizing western transcontinental services. For some time, actions have consisted of short-term rearguard decisions, generally cutting service but reintroducing specific elements to meet local pressures.

The first objective in any major overhaul of transcontinental service must be the gaining of political consensus on general strategy -- a matter of decision rather than analysis. Once this consensus has been reached, subsidiary questions -- who pays for what and what kind of organization should operate the service -- must be addressed. Major structural improvements will require sustained political will and an aggressive, marketing-oriented organization. Without this commitment, resources devoted to western transcontinental service might be better directed to other social or economic needs. But with this commitment, commercial performance could be improved to the point that Canadians would view their financial support as worthwhile to sustain a service of national and international significance.

Conclusions

The conclusions of our study are presented in Section 8 of this report.

In summary, the main conclusions are:

- . The existing approach to western transcontinental passenger rail services, including continued use of out-dated equipment, operating practices and marketing approaches, will lead to deterioration of traffic, continued high deficits and eventual discontinuance.

- . The market for western transcontinental service consists of pure transportation and tourist components requiring medium and long-distance through service and good quality sleeping accommodation and meal service.
- . Modernized service, with new bi-level equipment of the Superliner or UTDC/Can Car designs, could reach a substantially-larger market (e.g., doubled with a "Canadian" service), increase cost recovery to 50-70 per cent, and generate important tourism income and equipment manufacturing activity. (Should the "Super Continental" be reinstated and properly modernized, it could attract roughly the same number of passengers as a modernized "Canadian"). Rail service losses still incurred might be as low as three per cent of stimulated economic activity.
- . Modernized service would not eliminate present deficits, but the effectiveness of government support payments would be substantially increased. By the 1990's the deficit per passenger kilometre would decrease from 23 cents under the "Existing" approach to seven cents under a "Major Change" scenario.
- . Modernization with bi-level equipment is superior to either rebuilding existing equipment or implementing new single-level rolling stock.
- . Service could be modernized in 4-6 years, i.e., by the late 1980's, from an early decision date. Adaptation of available equipment designs is desirable, because an excessively long-term prototype development program will result in substantial foregone benefits, deficit control and stimulated economic activity.

- . Effective implementation depends on revised contracting procedures, labour agreements and organizational arrangements, implemented before or as new equipment is introduced.
- . Success in modernization depends on a stronger commitment on the part of government and the service operator to an aggressive strategy for service development. Without this commitment, the equipment and related facility investments necessary to modernize western transcontinental services cannot be justified.

1. INTRODUCTION

1.1 Background

VIA Rail Canada Inc. was formed in 1977, initially as a subsidiary of CN, later as a separate "Schedule D" Crown Corporation with the objective of marketing and managing railway passenger services then provided by CN and CP. VIA Rail was to assume responsibility for services after the Canadian Transport Commission (CTC) had individually reviewed such services. The CTC had been asked by the Minister of Transport in 1976 to develop rationalization plans that would integrate CN and CP services in a basic single service. The western transcontinental service, from Montreal/Toronto to Vancouver, was the first transferred to VIA following completion by the CTC of a "Preferred Plan" and a "Final Plan" in 1977 (See references CTC, April 1977, and CTC, October 1977 in Appendix F).

The CTC Final Plan provided for consolidation of CN and CP trains at Sudbury and Winnipeg, permitting a single through train, rather than two, across Northern Ontario. West of Winnipeg, separate sections would serve the traditional CP and CN routes. In the peak, summer season, trains would only be consolidated in Sudbury, since traffic required operation of two trains west of Sudbury.

While the plans focussed on routes, train accommodations and schedules, the CTC also drew attention to other matters critical to the success of transcontinental services:

Time and again...we have returned to questions of space reservation, through ticketing, information services, on-board amenities, point reliability, baggage handling, intermodal services, customer courtesy, etc. Similarly with regard to the matter of passenger train delay through freight priority, the weight of evidence against management in respect of the design, handling and operation of these trains was substantial. (CTC, April 1977, p.44).

The CTC also included in its Preferred Plan equipment and station refurbishing, including experimentation with higher density sleeping cars and less-costly meal service. A major marketing program was recommended, including investigation of the non-train-riding public. Finally, the CTC recommended:

That, depending on the outcome of the program for equipment refurbishment and market investigation, the Government and VIA Rail Canada agree, within a period of two years from the implementation of the Preferred Plan, to re-equip the transcontinental trains with new, modern, more efficient and more attractive equipment. (CTC, April 1977, p.61).

The CTC's plan was not a new approach to reduction of transcontinental service deficits. In the early 1970's, the Commission had attempted to integrate CN and CP services and to encourage efficiencies and pricing actions that would bring sleeper and meal service closer to break-even. However, CN and CP were unable to agree on a joint operation, and losses had dampened interest in innovation in passenger rail transportation. Also, compensation for losses, provided under the 1967 National Transportation Act, undoubtedly reduced the pressure for change.

At VIA's request, the Minister of Transport delayed implementation of the CTC's Final Plan until the Fall of 1979. The consolidated service was operated until November, 1981, when the Minister of Transport, by Order-in-Council, discontinued through service over the CN line in Western Canada (the "Super Continental"). The reason given was that capital funds were required for modernization and that such funds could only be acquired through reduction of existing operating deficits.

Cancellation of the "Super Continental" reflected the belief that the best prospects for successful railway passenger service lay in high-

density, urbanized corridors, particularly between Quebec City and Windsor.

This belief led to concentration of professional resources and management attention on the development of feasible corridor concepts, and coincided with the gradual development of VIA as a more centralized organization based in Montreal.

In a 1981 study prepared for the Government of Alberta (Day, 1981), management consultant John M. Day suggested that transcontinental services be re-designed to cater to off-peak demand levels, thereby ensuring high levels of equipment utilization. This approach, combined with new equipment and modernized operating practices, would yield substantial cost savings. Existing equipment might be operated as a supplement during the summer, when less prone to failure, to serve tourist traffic. However, the scope of the study did not call for an assessment of the market implications of these changes (e.g., of reduced frequency).

Transport 2000 has issued two recent studies concerning transcontinental services, one concluding that new bi-level equipment would significantly reduce operating losses (Transport 2000, May 1983), the other examining shorter-term options for Expo 86 tourist service and longer-term options for service west of Winnipeg (Transport 2000, November 1983).

Finally, a management firm recently carried out a study for a Federal/Municipal VIA Rail Task Force, entitled: "Report on the Tourist Market Potential and the Economic Benefits of Reinstating Vancouver-Edmonton Passenger Rail Service" (Currie, Coopers and Lybrand, 1984). This report examined short-term options for reinstating a passenger train over the Vancouver-Jasper-Edmonton route segment and made an initial determination of tourism benefits and economic impact.

The above-mentioned reports taken together contain many suggestions as to how to modernize western transcontinental services and the benefits thereof. They therefore have been of considerable assistance to the authors in the production of this report.

1.2 Study Context and Objectives

In the next few years, transcontinental service planning will be influenced by a variety of activities and interests, including:

- * VIA's approximately \$30 million prototype train project, which is intended to develop equipment suited to non-corridor markets, possibly including transcontinental derivations (Canada, Senate, 1984);
- * VIA's maintenance program, which will include a major facility in Winnipeg;
- * VIA's recently-initiated three-phase study of western and eastern transcontinental services;
- * The Federal/Municipal Task Force, which has developed shorter-term plans for Edmonton-Jasper-Vancouver service (Currie, Coopers and Lybrand, 1984);
- * Government and industry interests in domestic car and locomotive manufacturing and technological development;
- * Transport 2000's advocacy of improved service and re-equipment, based on its studies of bi-level operating costs and of western service alternatives;
- * The Canadian Transport Commission's current inquiry into VIA's service performance, particularly with regard to poor on-time reliability.

This study follows up on earlier studies and is complementary to the Task Force referred to above, examining the longer term prospects for modernized western transcontinental service. Its objectives are:

- * to evaluate existing services;
- * to describe the market for existing and modernized services, using existing data;
- * to define and evaluate service alternatives with respect to financial performance and indirect economic benefits;
- * to define requirements for modernization.

We have pursued these objectives through review of readily-available documentation, through interviews with government officials, company officers and other interested parties, and only to a limited degree through original research. In the short time available for this work (about two months), we may have overlooked some important sources of information. Also, some information could not be obtained either because it did not exist, could not be quickly compiled, or was considered to be confidential.

Unfortunately, there is little, if any, time left for industry and government to continue to study the problem. The transcontinental fleet, both motive power and rolling stock, is beyond its useful life and public pressure for improved performance makes early equipment and facility decisions necessary. Moreover, transportation and tourism opportunities which might be afforded by effective service are being missed. Finally, the large continuing deficits on existing services represent significant "opportunity costs" of delay.

Having said this, we are concerned about the present emphasis on equipment and facility modernization and on the preparations for passing a "VIA Rail Canada Act". Both are potentially-important ingredients of

service modernization, but if not part of an integrated service plan containing a clear statement of what transcontinental trains are needed for and what such trains require, they could contribute to further increase in deficits and decline in customer satisfaction.

In this report, our orientation is primarily commercial. In other words, we are first asking who would want to ride a transcontinental train, what kind of service would be required and whether revenues from such service offerings would cover all or most of the costs of providing required service. This does not mean that public policy objectives are denied; indeed, we recognize the existence of important economic and social reasons for public support of modernized train service. However, it does mean that we doubt the Canadian public's willingness to continue to subsidize indefinitely over two-thirds of such costs, or, in other words, to permit non-commercial objectives to be the dominant justification for taxpayer support.

2. EXISTING SERVICES

2.1 Western Transcontinental

2.1.1 Service Configuration

The "Canadian" service, diagrammed in Figure 2-1, essentially follows the traditional CP route less the segment from Montreal to Sudbury, via Ottawa. The train operates daily, year-round, with a full range of equipment: baggage cars; sleepers; coaches; dayneters; and dining, cafe-lounge, and dome-observation cars. However, on the Montreal-Toronto segment, only through sleepers, coach, cafe-lounge, and baggage cars are operated (in conjunction with corridor trains). Simplified car layouts are shown in Figure 5-1 appearing in section 5.3.1 ahead ("Existing Equipment"). More detailed layouts, supplied by VIA Rail, appear in Appendix D.

2.1.2 Connections

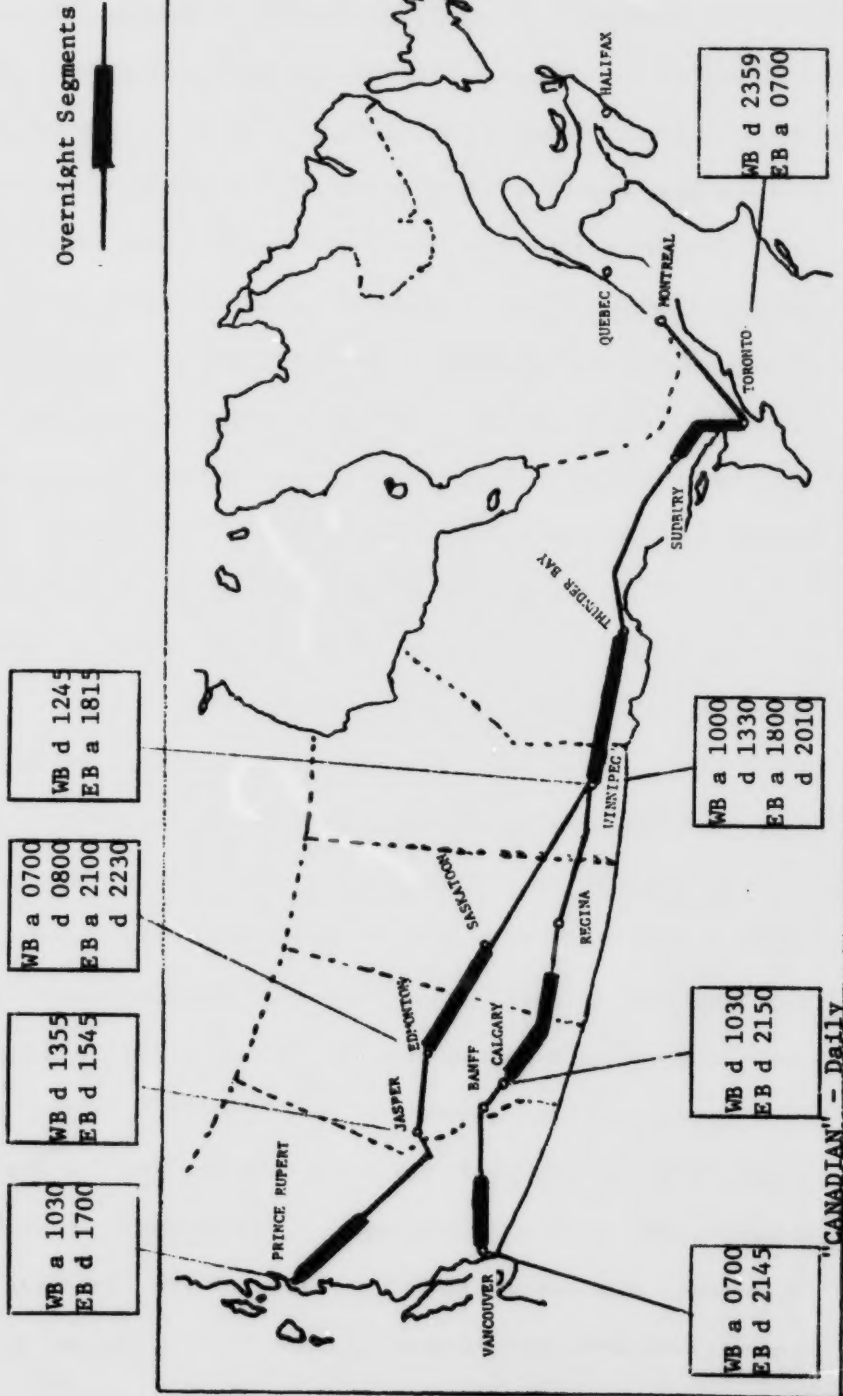
Rail connections are now possible at Winnipeg between the "Canadian" and the "Panorama" service which operates daily between Winnipeg and Edmonton, and onward to Prince Rupert three times per week. The latter service replaces two daytime services--Winnipeg-Regina-Saskatoon and Saskatoon-Edmonton--which did not permit through Winnipeg-Edmonton travel.

In Toronto, the "Canadian" is connected to Montreal by means of the through cars mentioned above. There also are connections to Ottawa and South-Western Ontario cities. In the West, a combination of rail and bus service connects Edmonton with the "Canadian" at Calgary.

Connections to Amtrak are very limited. In fact, there are no rail connections in the West since service between Seattle and Vancouver was discontinued several years ago. In Toronto, however, the late night departures and early morning arrivals of the "Canadian" permit convenient connections with Toronto-New York and Toronto-Chicago services.

FIGURE 2-1: 1984 WESTERN TRANS CONTINENTAL SERVICES

"PANORAMA" - daily Winnipeg-Edmonton
- 3/wk Edmonton-Prince Rupert



Although connections exist between the "Canadian" and these rail services, the practical value to the customer of these connections depends upon trip purpose, the aggregate time involved, and the reliability of connecting trains.

2.1.3 Trip Time and Scheduling

In an attempt to reduce on-time delays and to improve service to some communities, the western transcontinental schedule has been lengthened to between 86 and 89 hours (elapsed time), requiring four nights on-board between Montreal/Toronto and Vancouver. It is difficult to schedule a single train to provide convenient service for all communities, and the lengthened schedule reflects this, with Thunder Bay receiving worse service in the westbound direction, but Regina gaining much better service than before. Table 2-1 compares the current schedule with recent CP and CN schedules and with a much faster schedule which CN offered in 1963. The 66-hour schedule is within one of only a few "windows" which permit convenient daylight arrivals and departures at most major stations (other such schedules are 54 hours, 72 hours and 86 hours).

2.1.4 Reliability

About 80-85 per cent of transcontinental trains operate on time between major stations. This represents a marked improvement compared, for example, to 1980, when more than half the trains ran late. This improvement was achieved, however, with schedule lengthening on CP routings, which has increased on-board costs and equipment requirements and decreased the attractiveness of service for travellers. Also, performance varies over the year and often is below average even during the summer

TABLE 2-1

SAMPLE WESTERN TRANSCONTINENTAL RAILWAY SCHEDULES

<u>Westbound (Read Down)</u>				<u>Eastbound (Read Up)</u>			
CN	CN	CP	CP/VIA	CP/VIA	CP	CN	CN
1963	1977	1977	1984	1984	1977	1977	1963
1700	2120	1115	(1630) Montreal	(a1510)	a2005	a1025	a1440
1830	2330	1530	2359 Toronto	a0700	a1610	a0730	a1245
0225	0930	2225	0805 Sudbury/				
			Capreol	2330	1000	2355	0540
		0733	1835 Marathon	1230	2357		
		1255	0115 Thdr Bay	0725	1910		
2150	1230	2045	1330 Winnipeg	2010	0920	1915	0815
		0255	2215 Regina	0920	0045		
0325	1830		Melville			1055	0230
0720	2259		Saskatoon	0630	2240		
		1255	1030 Calgary	2150	1535		
1240	0800		Edmonton			2315	1435
		1510	1250 Banff	1835	1250		
1645	1425		Jasper			1625	0955
0015	2230	0045	2245 Kamloops	0625	0130	0630	0105
a0800	a0750	a0825	a0700 Vancouver	2145	1745	2055	1700

Elapsed Time (Hrs:Mins.)

66:00	85:30	72:10	89:30	86:25	71:20	82:30	66:40
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Notes: Earliest departures unless noted (a=arrival)
 () = through cars on connecting Montreal-Toronto service

months of July and August, when a large proportion of total annual traffic is carried.

The reasons for delayed trains are varied, but two major problems are passenger equipment failures, often due to steam system failure, and delays due to scheduled and unscheduled track repairs.

While a delay of a half-hour or hour often will be readily tolerated by passengers, many of the late trains are several hours behind schedule (in part because a late train can lose priority for track space, resulting in further delay). These delays, leading to missed connections, night-time arrivals and disrupted vacation plans decrease the prospects for repeat business and contribute to a poor consumer image of transcontinental rail services. As a result of consumer complaints about poor VIA service (most notably on Maritime services), the Canadian Transport Commission is currently reviewing the performance of all VIA services (see Figure 3-2 in Section 3.3 ahead).

2.1.5 The Level and Structure of Fares

As Table 2-2 indicates, the level of VIA's fares has been increasing at a faster rate than have consumer prices. Nevertheless there are indications that VIA's fares are not as high as they could be, at least in some instances. For example, VIA's 1982 overall revenue yield of 6.0 cents per passenger kilometre contrasts sharply with Amtrak's yield of 10.6 cents Canadian. Specific fares are compared in Table 2-3.

From 1982 to 1983, VIA's total passenger kilometres remained essentially unchanged (2,505 vs 2,539 million) while competing modes declined by five to 10 per cent. Consequently, VIA seems to have maintained sales levels by charging low fares. Perhaps such a fare policy

TABLE 2-2

VIA'S YIELD AND CONSUMER PRICES COMPARED, 1979-1983

(Passenger revenue per passenger kilometre)

	<u>Current Cents (Cdn)</u>	<u>Percentage Change</u>	<u>Consumer Prices Percentage Change</u>
1983	6.7	+8.3 %	+ 4.9%
1982	6.0	16.1	9.0
1981	5.1	14.4	11.7
1980	4.3	21.1	11.7
1979	3.4	-	9.4

Source: VIA 1983 Annual Report and Statistics Canada 62-001.

TABLE 2-3

VIA AND AMTRAK FARES COMPARED

<u>City-Pair</u>	<u>Distance (Km's)</u>	<u>One Way Coach (Cdn\$)</u>	<u>Fare Per Km (Cents)</u>
Montreal-Ottawa (VIA) vs New York-Philadelphia (Amtrak)	187 146	\$16.00 \$24.70	8.6 16.9
Montreal-Toronto (VIA) vs New York-Washington (Amtrak)	539 363	\$40.00 \$48.10	7.4 13.2
Calgary-Vancouver (VIA) vs Glacier Park-Seattle (Amtrak)	1,031 1,038	\$56.00 \$98.00	5.4 9.4

Source: Official Railway Guide, May 1984; and VIA and Amtrak Timetables.

may have been necessary because of VIA's low quality of service or perhaps because of keen price competition from other modes -- particularly the bus mode in the Central Corridor. In any case, it should be noted that yields (not published fares) for western transcontinental services consistently exceed systemwide yields and that VIA western transcontinental yields are about equal to those obtained by Amtrak on its Chicago-Seattle route. (Another factor which should be mentioned is that VIA recently has been subject to the Federal Government's "6 and 5" restraint program).

2.1.6. Traffic

Table 2-4 shows western transcontinental traffic since 1971. The set of charts contained in Appendix B illustrates 1983 western transcontinental train traffic for the entire year and by: peak (May to September); shoulder (April and October); and winter (November to March) seasons. The charts are for both westbound Train 1 and eastbound Train 2 and provide a breakdown of the numbers of passengers travelling in coach, dayniter and sleeper accommodations. They illustrate "link-flow" data by district and are based upon conductor counts. It should be noted that the Calgary/Field district has the highest traffic count regardless of season; also, that transcontinental train traffic is subject to wide seasonal fluctuations as in the case of most service industries. Consequently, capacity management, particularly over the Calgary/Field district, is essential for the efficient operation of the western transcontinental trains.

2.1.7. Financial

Table 2-5 shows financial results (revenues, costs, losses) for western transcontinental services from 1971 to 1983. Generally, the

TABLE 2-4

WESTERN TRANSCONTINENTAL TRAFFIC AND REVENUE YIELD

	<u>CP/CF Operation</u>					<u>VIA Operation</u>			
	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Revenue Passenger Kilometres (millions)	1345	1168	763	1162	969	1049	985	600	573
Revenue Passengers (000's)	-	-	-	-	-	963	855	462	478
Average Trip (Kilometres)	-	-	-	-	-	1089	1152	1299	1199
Revenue per RPK (1983 cents)	6.7	7.5	7.6	7.3	7.5	6.5	7.1	8.1	8.2

Source: CTC, 1977 April; and VIA Rail Canada.

TABLE 2-5

WESTERN TRANSCONTINENTAL FINANCIAL PERFORMANCE

	CN/CP Operation				VIA Operation				
	<u>1971</u>	<u>1972</u>	<u>1973*</u>	<u>1974</u>	<u>1975</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Revenues (000's)	31.0	31.2	22.9	38.2	36.4	52.8	59.3	45.6	46.9
Costs (000's)	76.7	84.1	80.8	108.4	122.0	168.2	192.1	196.9**	199.3**
Losses (000's)	45.5	53.0	57.9	70.2	85.6	115.4	132.8	151.3	152.4
Revenue/ Passenger km (millions)	1345	1168	763	1162	979	1049	985	600	573
Loss/ Passenger km (1983 cents)	9.9	12.6	19.3	13.4	17.6	19.8	15.8	26.8	26.6
Revenue/Cost	.40	.37	.28	.35	.30	.31	.31	.23	.24

Source: CTC, 1977 April; and VIA Rail Canada

* Railway strike in summer of 1973

** 1982 and 1983 costs are estimates, since final adjustments under railway operating agreements not included.

pattern is one of increasing losses, both in absolute terms and relative to traffic carried. The proportion of cost covered by revenue has fallen from 40 per cent in 1971 to 24 per cent in 1983. Between 1981 and 1982, losses increased faster than general rate of inflation, despite the discontinuance of the "Super Continental" late in 1981.

Of the \$199 million in costs attributed to western transcontinental service in 1983, \$94 million were costs incurred by VIA and \$105 million were charges from CN and CP for servicing and maintenance of equipment and for train operations. The VIA portion includes about \$12 million in depreciation, amortization and retirement losses allocated to western transcontinental service according to its portion of system car-kilometres, including depreciation for new equipment operated in the Quebec-Windsor corridor, despite the fact that existing, 30-year-old transcontinental equipment should be fully-depreciated by now. Also, a further \$59 million allocated according to car-kilometres probably overstates costs due to the service, because of larger-than-average trip lengths. An alternative approach, allocating half of these expenses by car-kilometres and half by passenger trips, reduces the figure to \$36 million.

The CTC has compared Canadian railway costing procedures, on which CN and CP charges to VIA are based, with costing procedures in effect for Amtrak. If Amtrak's "strictly-avoidable costing" approach were adopted for expenses other than equipment maintenance, charges to VIA would fall by somewhat more than 9 per cent.¹ Canadian railway costing procedures include long-run variable costs which would increase or decrease at some time in the future when infrastructure and operations could be adjusted to a new

¹ Other analyses indicate that the reduction could actually be as much as twice the 9 per cent figure.

level of traffic. In this sense, passenger trains are treated as an integral part of railway operations and expected to bear not only their direct costs (crew, fuel, etc.), but also costs which are common to freight and passenger traffic (e.g., signalling). The "strictly-avoidable" approach, in contrast, treats passenger service as marginal to a larger freight operation.

If VIA's internal cost allocations are adjusted as above, and if Amtrak's approach were adopted for railway charges, 1983 western trans-continental costs would be reduced from \$199 million to \$155 million and cost recovery would increase from 24 per cent to 30 per cent.²

2.2 Comparison with Amtrak Services

Amtrak has a more extensive long-distance network than does VIA Rail, with a large portion of western services originating from Chicago. Because of differences in terrain and distribution of population centres, comparisons between Canadian and U.S. services cannot be exact. However, the Chicago-Seattle "Empire Builder" is probably the closest in character to Western Canadian services. In Table 2-6, the "Empire Builder" is shown to have grown from a modest service in 1978 carrying about one-fifth the traffic carried on Canadian transcontinental trains to a more substantial service with new bi-level "Superliner" equipment, carrying almost as much traffic as the "Canadian". Part of this traffic growth is due to an

² If the estimate of cost savings due to utilizing the Amtrak costing approach were doubled, as suggested in Footnote 1 above; the costs would be reduced to perhaps \$145 million and the cost recovery rate would improve to 32 per cent.

TABLE 2-6

VIA AND AMTRAK WESTERN SERVICES COMPARED

	<u>Toronto-Vancouver</u>		<u>Chicago-Seattle</u>	
	<u>1980</u>	<u>1983</u>	<u>1978</u>	<u>1983*</u>
Route Length (km)	4497 (CN)	4360 (CP)	-	3539
Average Schedule Speed** (km/hr)	59.1	54.4	-	80.5
Percent On-Time	46	85	-	77 (1982 data)
Passengers (000)	963	678	188	425
Passenger-km (millions)	1049	573	208	444
Average Trip (km)	1089	1199	1109	1046
Rev/Pass. km (cents)	5.0	8.2	3.6	7.3
Revenue/Cost	0.31	0.24	-	0.53 (1982 data)

* Fiscal Year ends September 30.

** Average for westbound and eastbound services. For Canadian services, summer timetables used.

increase in basic frequency from tri-weekly to daily.³ However, Amtrak has estimated that for routes receiving the new Superliner equipment, traffic increases -- after adjusting for increased capacity -- are between 37 per cent and 47 per cent of levels before introduction of new equipment.

The "Empire Builder's" on-time performance is not as good as 1983 "Canadian" performance, but is better than 1980 on-time performance for the "Canadian" and "Super Continental". However, scheduled speed is much superior for the Amtrak service -- 80 km/hour versus 54 km/hour for the VIA service.⁴ Table 2-6 also shows much better financial results for the "Empire Builder" than for the "Canadian". However, part of the difference is due to a different cost base, which as mentioned above does not include all Amtrak system overheads and which provides a more restricted basis for railway train operating charges.

2.3 Comparisons with Other Countries

There was not sufficient time to compile comparative statistics for long-distance trains in other countries. In any case, it is less likely that markets, operations and institutional arrangements are as comparable to Canadian conditions as they are for other North American services. However, certain features of non-North American trains bear consideration for modernized Canadian services.⁵ The "Orient Express" runs two or three times a week between London and Venice (a 24-hour trip), using 1920's and 1930's equipment fully-restored to its period. This luxury "heritage

³ Although Amtrak considers a large portion of its long distance market to be price sensitive, these gains in traffic have coincided with increases in revenue yield roughly consistent with those achieved by VIA over a similar period.

⁴ In part, this difference might reflect differences in terrain, plant and freight traffic density.

⁵ Following material is based upon CTC, 1984.

train" concept commands a relatively high fare (\$595 for a 24-hour trip); meal service is of a very high standard and is priced accordingly. The train, which has high load factors (80 per cent), is run by a private company which expects a profitable operation within two years.

The South African "Blue Train" is a similar luxury train, providing a three-times-per-week service between Cape Town and Pretoria (a 24-hour trip). This train does not fully recover its costs, but the South African government believes that the train's role in attracting tourists justifies the subsidy.

The Australian "Indian-Pacific" runs between Sydney and Perth and is somewhat more like Canadian transcontinental service in population served, route length, and type of accommodations offered. However, two-thirds of direct operating costs are recovered from passengers. The rationale for government subsidy for the remainder of the costs has been based mainly upon considerations of national unity, social benefits, and the tourism trade value of the train.

3. ANALYSIS OF EXISTING DEFICIENCIES

The preceding section indicated that western transcontinental services lose substantial amounts of money and that only limited savings, if any, have only been achieved by significant service cuts. Lengthened schedules, marginal on-time performance, out-dated equipment, and the lack of a strong, consistent customer orientation have all contributed to an increasingly negative public image.

Considering the effects of extensive service revisions and the lengthening of schedules after 1976, and the 1981 discontinuance of the "Super Continental", the traffic on western transcontinental trains has remained remarkably stable. However, we expect that continued deterioration of service will result in significant weakening of that demand over the next 10 years. Inadequate financial and market performance can be traced to several factors, some related directly to western transcontinental services and some to the institutional framework within which these services are operated.

3.1 Equipment

Equipment is often cited as a major contributor to increasing costs and poor customer acceptance. For railway passenger services as a whole, car maintenance costs per kilometre (net of general inflation) have risen considerably over the last 25-30 years -- from 20 cents to 52 cents, or by 159 per cent, between 1957 (when passenger fleets were relatively new) and 1981 (see Table 3-1 and Figure 3-1). In 1983, western transcontinental equipment maintenance and servicing costs -- \$46.5 million, or \$1.08 per car-kilometre -- accounted for over a quarter of total service costs. The effect of out-dated equipment on the market is not easily determined, but

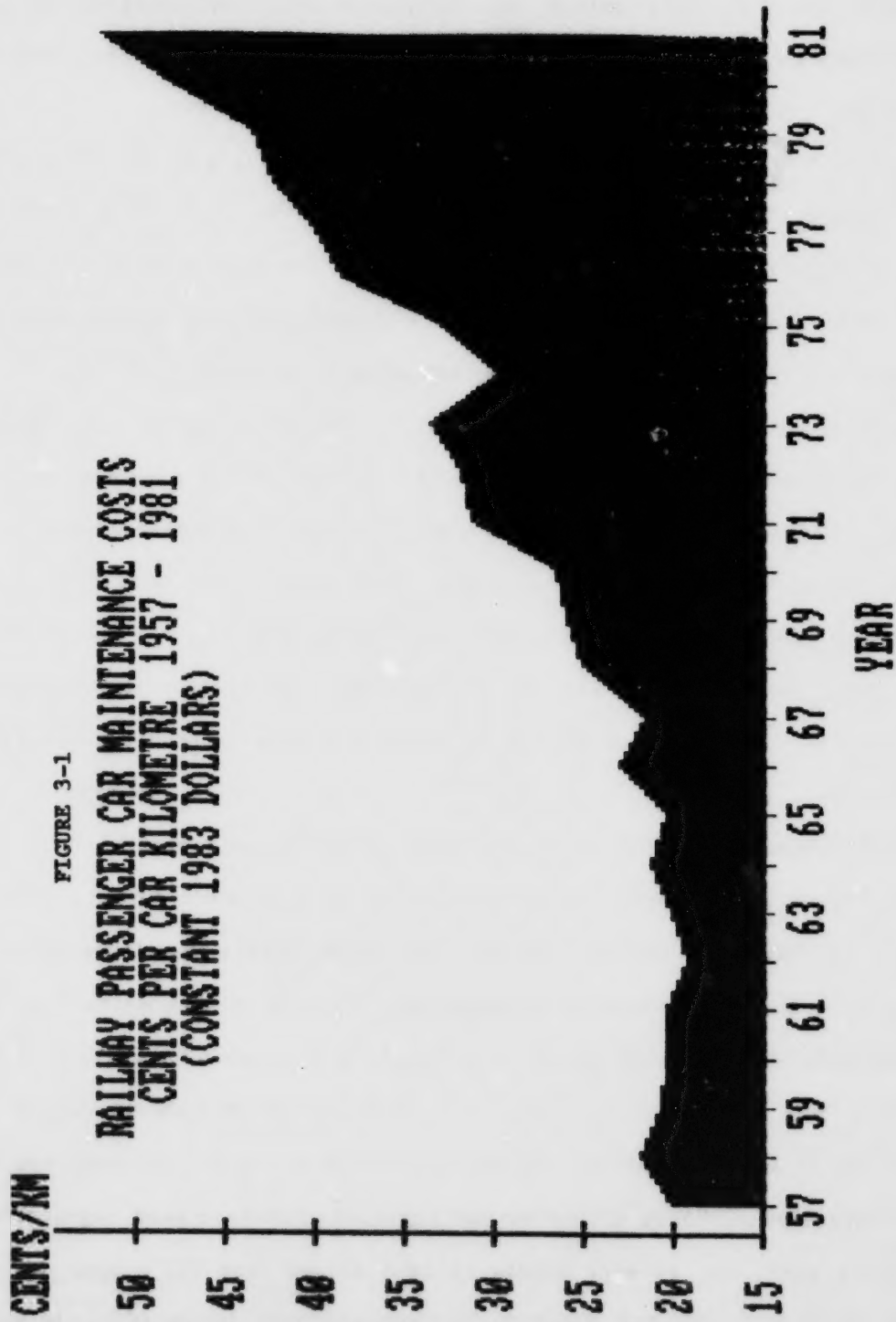
TABLE 3-1

PASSENGER CAR MAINTENANCE COSTS
(constant 1983\$)

YEAR	(\$ millions)			(\$/car km)		
	CN	CP	TOTAL	CN	CP	TOTAL
1957	71.9	50.4	122.3	.20	.20	.20
1958	76.9	48.8	125.6	.23	.20	.22
1959	71.2	43.8	115.0	.22	.20	.21
1960	68.4	37.0	105.5	.21	.19	.20
1961	58.2	37.3	95.5	.19	.22	.20
1962	50.8	34.3	85.1	.18	.22	.19
1963	50.7	34.7	85.4	.19	.22	.20
1964	65.7	33.5	99.1	.22	.20	.21
1965	72.7	24.1	96.8	.22	.18	.21
1966	75.6	20.0	95.6	.23	.24	.23
1967	79.4	20.4	99.8	.22	.21	.22
1968	73.4	20.4	93.7	.24	.29	.25
1969	67.0	18.2	85.2	.26	.27	.26
1970	61.4	14.8	76.2	.27	.23	.26
1971	64.1	14.8	78.9	.32	.29	.31
1972	58.5	13.6	72.1	.32	.31	.32
1973	49.5	14.0	63.5	.32	.40	.33
1974	50.2	14.5	64.7	.28	.35	.30
1975	53.6	14.6	68.2	.32	.38	.33
1976	61.9	13.3	75.2	.39	.36	.39
1977	63.4	12.0	75.4	.42	.34	.40
1978	63.5	11.6	75.1	.44	.35	.42
1979	63.0	13.1	76.2	-	-	.43
1980	70.6	11.0	81.5	-	-	.48
1981	75.1	11.0	86.0	-	-	.52

NOTES: . Maintenance costs inflated to 1983 values by GNE implicit price index (1983 estimated from 1982 values using quarterly growth for 1982 3rd, 4th quarter and 1983 1st and 2nd quarter).

. 1979-1981 VIA cost/car km only available for aggregate of CN and CP maintenance.



as mentioned earlier, Amtrak has estimated that introduction of new long-distance, bi-level equipment has resulted in traffic increases of 37-47 per cent.

3.2 Contracting Arrangements

A large proportion of rail service costs arise from agreements with CP and CN to operate services and maintain equipment. These agreements provide for payment of long-run variable costs to CP and CN as well as modest incentives for on-time performance. Penalties can be assessed for poor performance, but not so as to reduce payments below long-run variable costs. Although the CTC audits CN and CP charges, it does not attempt to ensure that CP and CN are pursuing cost efficiencies (e.g., reducing passenger crews consistent with reductions in freight crews). Furthermore, the costs billed by CN and CP are greater than those which would be assessed if costing procedures in use by Amtrak were adopted (as described in Section 2.1 above).

Although "cost-plus" contracts are in use in the commercial sector, they are often reserved for exploratory or research efforts, where objectives may not be well-defined and where substantial uncertainties exist. In a truly-commercial environment, risks of most undertakings are shared by the contracting parties, and poor performance will usually result in less than full cost recovery. In the case of VIA-railway contracts, there is no such assumption of commercial risk and hence no incentive for good performance. This situation may have resulted from poor negotiations on VIA's part, but is more likely to have arisen from VIA's poor negotiating position -- being faced by a monopoly supplier without adequate regulatory protection.

With regard to CN and CP charges, it is noteworthy that the railway costing system in place in the 1970's, by which subsidies were calculated and claimed by the railways, showed significant variability of cost with train activity (e.g., kilometres, car kilometres). However, between 1981 and 1982, when car kilometres were reduced 21.5 per cent, payments (net of inflation) to CN and CP decreased by only 8.4 per cent.¹

Table 3-2 shows VIA's expenses subdivided between internal VIA operations and VIA's contracts with CN and CP for train operation and equipment maintenance. Expenses are also expressed in real terms (net of inflation) per car-kilometre operated. Railway charges per car kilometre have increased steadily by 5 to 10 per cent per year. More importantly, costs under VIA's control increased dramatically from 1980 to 1983. In real terms, VIA's costs increased 69 per cent; expressed per car-kilometre, these costs increased 139 per cent.

3.3 Management

Although new or rebuilt equipment, coupled with more rigorous control of costs, would contribute significantly to loss reduction, a satisfactory outcome is unlikely without more attention to marketing strategy.

A problem facing western transcontinental service is the lack of a clear concept of the market to which the service can and should be directed. As an indication, we were unable to obtain from VIA up-to-date information concerning origins and destinations of existing rail travellers. Data on passenger handlings were acquired, but these do not

¹ In VIA's 1983 annual report, operating payments for 1982 were shown to be lower than the payment recorded in the 1982 annual report. The reason for this is not clear.

TABLE 3-2

VIA RAIL OPERATING EXPENSES 1980 - 1983

(\$millions)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
TOTAL OPERATING EXPENSES	459.2	591.1	603.0	642.3
PAYMENTS TO CN/CP	339.2	392.6	357.4	379.9
VIA COSTS:	120.9	198.5	245.6	262.4
Depreciation				
Amort., Loss on				
Assets	8.1	20.5	30.6	32.9
General & Admini-				
stration	28.3	34.3	43.6	55.8
Operations	83.6	143.7	171.4	173.7

1983 \$/CAR KM:

Total	3.63	4.30	5.07	5.56
CN/CP Payments	2.68	2.85	3.01	3.29
VIA Costs	.95	1.44	2.06	2.27
VIA Operations	.66	1.04	1.44	1.50

Source: VIA Rail Annual Reports

Notes: Where figures for a given year are available in more than one annual report, the more recent figure has been taken.

indicate origin and destination. We were able to acquire older statistics and travel surveys developed by CN, CP and the CTC and these data show an average trip length of roughly 1,200 kilometres, a mix of short, medium and long-haul carryings, and requirements for sleeping cars and good quality meal service.

The Western Intercity Study ("WICS") demonstrated that potentially high demand for intercity rail service on the Prairies was limited primarily to Calgary-Edmonton, thus implying that transcontinental train service marketing should be concentrated on long-haul and medium-haul (e.g., Winnipeg-Calgary) travellers (VIA/T.D.C., 1981). However, this information concerns existing rail passengers only, and it is unlikely that a modernized service could be mounted solely on the strength of the existing traffic level. Through years of neglect, service offerings have become less-focused, with the result that the markets now being served may not be VIA's best opportunities for generating revenue. The potential market for western transcontinental service is discussed further in Section 4 ahead.

Another major problem is the apparent absence of a complete and integrated service plan for transcontinental service designed to be responsive to customer needs and to opportunities for cost reduction. Historically, service design has consisted primarily of capacity adjustment -- reduction of train frequency, re-scheduling, re-routing and adjustment of consists. VIA is now examining equipment possibilities, adjustment of on-board and train crew rules, markets, etc.; however, these elements are not necessarily being directly related to western transcontinental needs (e.g., the prototype program apparently is seeking general-purpose

designs). It is also apparent that VIA must go some way to discover the full organizational implications of a "customer orientation". There are still too many "horror stories" of unreliable information concerning train arrivals, dirty equipment and station facilities, inconvenient reservation procedures, poorly-trained staff, etc.

In our opinion, VIA has yet to integrate departmental functions in such a way as to modernize and control service levels effectively. While VIA has a five-year strategic plan to support budget forecasting and overall goal-setting, we found no evidence of an operational business and marketing plan such as now in use by hundreds of North American corporations -- including Amtrak. Also, while Amtrak annually prepares (separately from its annual financial report) a retrospective performance report which is readily available to the public, VIA does not seem to have such a document.

Of particular significance for western transcontinental service planning is the centralization of many of VIA's functions in Montreal. Such centralization might reduce administrative costs, but might also reduce awareness of, and responsiveness to, regional markets. This centralization should also be seen in the light of service cuts outside of central Canada, which were supposed to free funds for modernisation projects.

VIA's modernization priorities, as measured by funds allocated for studies and by disposition of new equipment, have been primarily for improved service in the Quebec-Windsor corridor. These priorities also appear to be reflected in regional advertising allocations. As a consequence, it is far from clear that VIA has a corporate commitment to modernized western transcontinental services beyond the operation of such services with old equipment as a "social obligation" as directed by the

Federal government. While VIA did consolidate CN and CP services according to the CTC's 1977 rationalization plan, many of the CTC's other recommendations for improvements in service, including re-equipment, have not been actively pursued. Whether recent initiatives (the prototype train project and a multiple-phase study of transcontinental needs) represents a true awakening of interest within VIA, or are merely a response to political pressure, remains to be seen. Without a strong team commitment, supported by individual enthusiasm and dedication to improved service, no quantitative analysis, no matter how promising, will be sufficient to justify the expenditures required for continued, modernized service.

The prospects for modernized western transcontinental services are also affected by VIA's long-term prospects as a passenger railway operator. Continued high deficits (\$469 million in 1983), technical problems, poor service reliability and failure to act quickly in modernizing services have all weakened VIA's credibility. The CTC's review of VIA's performance (Figure 3-2) is symptomatic of a serious decline in consumer confidence in VIA.

Whether VIA's poor financial and service performance is due to internal or external causes,² and regardless of VIA's present efforts and intentions, the fact is that six years have passed since the C.T.C.'s Final Plan was issued, during which service has declined, losses have

²For example, while government departments are represented on VIA's Board of Directors, capital and operating plans must be approved directly by the federal government, including additional review by some of the same departments having such representation. Government contracts with VIA are for specific services, providing limited scope for short-term adjustment; similarly, service adjustments must be approved by the CTC. Inevitably, this kind of regulation limits VIA's ability to pursue efficiencies and to adapt to market changes. Also, the effort required by government for detailed management and regulation limits the government's capacity to deal with fundamental structural problems.

FIGURE 3-2

C.T.C. NOTICE OF PUBLIC HEARING



Canadian Transport Commission
Commission des transports

CANADIAN TRANSPORT COMMISSION

PUBLIC NOTICE

**INVESTIGATION OF VIA RAIL'S
ON-TIME PERFORMANCE**

The public is hereby invited to present submissions or comments concerning an inquiry into the "on time performance of VIA Rail" that was recently announced by the Railway Transport Committee of the Canadian Transport Commission. The investigation will focus on all transcontinental, corridor and regional VIA Rail services during both peak and regular seasons.

Three CTC officers have been appointed under section 81 of the National Transportation Act to conduct the inquiry that will study among other things:

- the various factors which could contribute to VIA Rail's poor performance in departure and/or arrival time such as weather conditions, equipment failures and the provision of service and equipment to VIA Rail by CN and CP Rail;
- the age, reliability, efficiency and the impact of weather conditions on VIA Rail's equipment;
- the availability and distribution pattern of equipment which could have contributed to VIA Rail having difficulties meeting customer demand;
- the extent to which new equipment could improve VIA Rail's service reliability;
- factors or matters which might contribute to the elimination or alleviation of any of the deficiencies noted in the operations of VIA Rail services during this investigation.

Anyone wishing to make written submissions or comments may do so by writing before June 15, 1984 to Ingrid Cheshire, Secretary, VIA Rail Investigation, Room 1524, Canadian Transport Commission, OTTAWA K1A 0N9.



increased, and no major solutions have been found to the structural problems facing railway passenger service. At the present time, public opinion favours modernized railway services and this might still be translated into support for VIA Rail. However, it is unlikely that such support can be sustained indefinitely without visible and substantial improvements in service quality and cost control.

3.4 Policy

Finally, poor passenger system performance is often attributed to a "policy vacuum" in the federal government. Although general roles for rail transportation, including transcontinental trains, were defined by the Minister of Transport in 1976, and basic regulatory decisions have been made, action on specific services and on system modernization seems to have been based primarily on shorter-term political considerations, rather than a definite longer-term, overall plan for modernization. Most initiatives appear to fall in three main categories: service cuts; short-term or experimental services; and developmental projects aimed at the equipment manufacturing sector. The recent decision to fund new maintenance bases for VIA suggests a change in emphasis, although this decision does not seem to have emerged from a longer-term overall strategy for system modernization.

In the absence of a clear rationale for public financial support for transcontinental services, the pattern has been one of rearguard actions in which service has been trimmed incrementally but never adequately restructured. Support for service has been loosely justified on national unity grounds, tourism benefits, and access benefits without objective evidence concerning the contribution such trains make to Canadians'

understanding of each other, of the numbers of tourists attracted to Canada (and how much they contribute to national and local economies), and of the importance of trains for local access.

Decisions concerning VIA's services are now highly politicized and the number and diversity of interests is most evident in the case of transcontinental services. While more can be expected of VIA management, successful modernization of western transcontinental services will also depend equally on sustained leadership at the political level.

4. MARKET ANALYSIS

4.1 Long-term Travel Trends

As Table 4-1 indicates, the long-term pattern of rail travel in Canada has been quite similar to that in the United States. A comparison during the VIA era is also provided, in Table 4-2.

TABLE 4-1

RAIL PASSENGER TRAFFIC IN CANADA AND THE U.S.: 1915 - 1980

(Passenger-kilometres in Millions)*

<u>Year</u>	<u>CANADA</u>		<u>UNITED STATES</u>	
	<u>Pax-kms</u>	<u>%</u>	<u>Pax-kms</u>	<u>%</u>
1980	3,281	+10.6	17,702	+ 9.6
1975	2,930	-19.8	16,007	- 7.8
1970	3,655	-14.7	17,365	-38.2
1965	4,289	+15.0	28,101	-18.0
1960	3,645	-21.7	34,267	-25.4
1955	4,656	+ 2.7	45,962	-10.2
1950	4,534	-55.9	51,182	-65.4
1945	10,272	+193.1	147,840	+285.6
1940	3,503	+37.4	38,344	+28.7
1935	2,552	-34.6	29,799	-31.1
1930	3,901	-16.8	43,270	-25.7
1925	4,687	-17.4	58,229	-23.6
1920	5,670	+41.8	76,266	+45.9
1915	3,999	--	52,285	--

* Inclusion of commuter traffic may distort these data to some extent.

SOURCES: U.S. Bureau of Census, Historical Statistics of the U.S.; Statistical Abstract of the U.S., 1974; Canada Year Book and Statistics Canada No. 52-210.

TABLE 4-2

VIA AND AMTRAK PASSENGERS-KILOMETRES COMPARED

	(millions)	
	<u>VIA</u>	<u>AMTRAK</u>
1983	2,505	6,832
1982	2,539	6,717
1981	3,117	7,667
1980	3,104	7,377
1979	2,970	7,913
1978	-	6,487

SOURCE: Via and Amtrak Annual Reports

Rail passenger-kilometres increased rapidly in both Canada and the United States during the early part of this century. It was, incidentally, during this period, when the railroads dominated intercity travel, that many of the major western national parks were established in North America. In fact, many of these parks actually originated in response to the pressure from the railroads for the development of tourist destinations along transcontinental train routes.

Beginning in the mid-1920's, however, competition from the highway modes began to reduce rail passenger traffic in both absolute and relative terms -- particularly for shorter trips. By 1929, the automobile was already accounting for 80 per cent of total intercity travel, and by 1939 it had increased its share of total intercity travel to about 90 per cent - approximately the same percentage as it is today. Then, shortly after World War II, competition from the air mode began to reduce long-distance rail traffic. Sleeping car traffic in the United States, for example, fell from 5,865 million revenue passenger-kilometres in 1960 to just 808 million

in 1975. In 1982, the automobile in Canada accounted for 46 per cent of all person-trips of more than 800 kilometres. The air mode accounted for another 46 per cent of these trips and the remaining 8 per cent was about evenly split between the bus and rail mode (Statistics Canada, 1982). Nevertheless, it should be acknowledged that the per capita propensity to use non-commuter passenger trains still remains three times higher in Canada than in the United States.

To summarize, what remains today of rail passenger traffic is a very small but mature, specialized market that has already experienced a great degree of competitive impact. Consequently, it seems unlikely that bus or air deregulation in Canada will have much impact on the demand for transcontinental rail travel.

Amtrak's experience during the U.S. airline deregulation experiment is interesting because it actually increased its ridership on routes similar to the Canadian transcontinental routes during deregulation. From 1978 to 1983, ridership on the "Empire Builder" Chicago-Seattle route increased from 188,000 to 425,000 (+126 per cent), while passenger revenues increased from U.S. \$6.6 million to \$24.8 million (+276 per cent). Clearly there is a relatively small but numerically significant segment of the overall travel market that wants something different than that offered by the auto, air or bus modes.

Finally, it should be noted that although long-term travel trends in Canada and the United States have been similar, there have been major differences from time to time that developed as a result of different government and railway policies. One such case is that of rail passenger transportation in the 1960's. In the United States, rail travel continued to decline at the end of World War II until the formation of Amtrak in the

early 1970's. In Canada, however, rail passenger traffic in the 1960's experienced somewhat of a renaissance that resulted in significant increases in traffic.

The difference was mainly the result of CN's decision to adopt an aggressive marketing program (for example, the "Red, White and Blue" fare system). Between 1962 and 1968, CN passenger kilometres increased by 90 per cent while CP passenger kilometres decreased by 42 per cent. CN sales increased not only for short and medium trips but for long-distance trips as well. For example, between 1963 and 1968, passenger kilometres on CN transcontinental trains increased by 138 per cent. Nevertheless, during the 1960's neither CN nor the Federal government made any significant capital investments in long-distance rail passenger equipment and, consequently, capacity constraints were encountered. The "renaissance" period ended in 1968 when the 80 per cent subsidy provisions of the National Transportation Act began to take hold and CN reacted by adopting a much less-aggressive marketing strategy with respect to rail passenger transportation.

According to Mr. Garth Campbell, who was manager of CN Passenger Sales and Services before 1968:

The Government of Canada never truly appreciated the contribution which rail passenger services could make to the overall problem of transporting people. The only figure which meant anything was the calculated loss figure, and all logic for creative positive action seemed to die in the face of it. Even proposals designed to eliminate the loss, without the agony and frustration of massive service abandonment, seemed to fall on deaf ears, mainly I believe, because they involved infusions of new money which was hard enough to obtain, even for freight services. Both the Railroad and the Government seemed frozen in what were ultimately sterile postures, each in its own way failing to come to grips with the real problem, or to seize the real opportunity (Campbell, 1970, p. 338).

4.2 Rail Passenger Profile

The characteristics of the typical user of rail passenger transportation vary greatly depending upon trip length and accommodation type. Long-distance rail travellers are very likely to be travelling for non-business purposes. Moreover, long-distance coach travellers are characterized by young and middle income groups, while those with sleeper accommodations are likely to be older and have somewhat higher incomes. Table 4-3 presents a rough amalgam of CN and CP surveys taken between 1971 and 1975 (these were the latest numbers made available to us; though obviously dated, they are thought to remain basically valid).

Another source of information concerning rail passenger characteristics is Alberta Tourism's 1982 Alberta Travel Survey (Travel Data International, 1983). Unfortunately, this survey does not differentiate between coach and sleeper passengers nor does it cover the winter, off-peak period. Nevertheless, this survey of travellers who visited Alberta in 1982 does provide some interesting information for all modes of travel, as shown in Table 4-4. A few highlights of these data are:

- * 91 per cent of the rail passengers were travelling for non-business purposes; 36 per cent of the air passengers were travelling for business purposes.
- * Older couples were the largest of lifestage categories (21 per cent), followed by younger couples (13 per cent); families, particularly younger families, were generally underrepresented among rail travellers.
- * 49 per cent of the rail travellers in 1982 were Canadian, 32 per cent from the United States and 20 per cent were from overseas.
- * Of the train passengers, 20 per cent were from overseas; in comparison, only 14 per cent of the bus passengers and only 11 per cent of the air passengers were from overseas.

TABLE 4-3

A CHARACTERIZATION OF TRANSCONTINENTAL TRAIN PASSENGERS

<u>Age</u>	<u>Coach</u>	<u>Sleeper</u>
Less than 21	30%	5%
22 to 35	30	15
36 to 49	10	20
50 to 64	15	35
More than 65	5	20
No response	10	5
	100%	100%

<u>1975 Family Income</u>	<u>Coach</u>	<u>Sleeper</u>	<u>All of Canada(1975)</u>
Less than \$5,000	12%	7%	8.4
More than \$15,000	24%	41%	50.3

<u>Travel Purpose</u>	<u>Coach</u>	<u>Sleeper</u>
For Pleasure		
CN (1972)	50%	85%
CN (1975)	45%	75%

	<u>Coach</u>	<u>Sleeper</u>
Why Rail?		
Economy	40%	N/A
See the country	20%	55%
Comfort	25%	25%

SOURCE: CTC Research Branch, 1976; and Statistics Canada #93-724.

TABLE 4-4

1982 ALBERTA TRAVEL SURVEY - TRANSPORTATION SUMMARY

(mode of exit)

	All Visits to Alberta	Private Vehicle	Plane	Bus	Train	Other
<u>Volume</u>						
Total projected household parties ('000)	2,102	1,367	560	141	27	7
Average household party size	1.86	2.14	1.32	1.30	1.84	1.67
Total persons ('000)	3,909	2,926	739	183	49	12
<u>Duration of Trip</u>						
Average nights in Alberta	6.11	4.23	8.37	15.19	7.70	3.94
Average nights away from home	17.89	16.29	16.68	33.99	25.92	75.69
<u>Season</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
Spring (May 15 - June 14)	15	15	17	11	12	13
Summer (June 15 - Sept. 6)	59	59	60	62	66	75
Fall (Sept. 7 - Oct. 31)	26	26	24	26	22	12
<u>Residence</u>						
Canada	72	75	66	68	49	42
United States	23	23	23	18	32	57
International	6	3	11	14	20	1
<u>Accommodation in Alberta</u>						
Friends/relatives	37	36	37	42	24	10
Hotels/motels	37	31	50	41	62	45
Campgrounds	15	21	3	55	5	40
Other	7	6	8	8	13	34
None	20	21	15	16	13	33
<u>On Package Tour</u>	3	1	4	22	5	16

....Table 4-4 Cont'd.

	All Visits to Alberta	Private Vehicle	Plane	Bus	Train	Other
<u>Primary Trip Purpose</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
Vacation	42	46	28	49	66	37
Visit friends/relatives	31	31	31	35	22	19
Business	17	10	36	9	9	39
Personal reasons	9	12	4	5	3	5
Just passing through	1	1	1	2	-	1
<u>Stage in Life</u>						
Young bachelor	9	7	12	14	11	26
Young couple/ cooperative unit	16	16	15	10	13	8
Young family	13	14	12	5	7	18
Middle family	11	12	12	9	7	9
Older family	11	10	12	10	8	9
Crown family	9	8	9	11	11	7
Older couple	13	14	9	13	21	
Retired couple	10	12	5	9	12	5
Older single	5	4	7	13	7	9
Not stated	5	4	7	6	4	9
<u>Expenditure in Alberta</u>						
Average per household party	\$314	\$269	\$427	\$317	\$374	\$861
Average per household party per night	\$ 52	\$ 58	\$ 49	\$ 30	\$ 50	\$168
Total expenditures in Alberta ('000,000)	\$660	\$364	\$236	\$ 44	\$ 10	\$ 6

Source:

*Travel Data International, 1983.

4.3 Domestic Travel Potential

One of the largest potential markets for western transcontinental train travel is, of course, Canadians travelling in Canada. But before VIA can take full advantage of this opportunity, it will have to re-examine how its existing product offerings are positioned in the travel market place.

The overall domestic travel market is not small. According to the most recent Canadian Travel Survey (Statistics Canada, 1982), there were slightly more than seven million person-trips taken in 1982 of more than 800 kilometres. This is a huge market, yet only about 3.5 per cent or approximately 230,000 of these long-haul person-trips, were by rail. Consequently, a very small shift in market share from the automobile and/or air modes could easily double the demand for rail travel.

One of the unique characteristics of the experience of train travel is the ability of the traveller to relax and observe the passing landscape. Moreover, the view from a train right-of-way is often more scenic than from a highway because of the absence of commercial signs and the fact that railway bridges do not have sides and guardrails to block the view. In short, scenery is a very important part of the long-distance train experience.

Amtrak is apparently aware of the train's unique competitive advantages and has developed a very effective promotional approach based on such messages as:

- . The train 'lets people experience a truly unique means of transportation'.
- . 'The train. Where they can see the wonders of our country right in front of their eyes. Not as a dot from 30,000 feet up.'
- . 'The train. Where they can relax in wide reclining seats for a change, and enjoy a delicious meal or refreshments along the way.' (Amtrak, 1984 Timetables).

These messages help to differentiate the trains from the other modes, and VIA needs to do much more along these lines if it is to develop potential markets. Moreover, VIA needs to tailor its product strategy to the wants and characteristics of specific customer groups. For example, it is well-known that many Canadians take a transcontinental train trip to see and learn something about their country. But VIA does little to inform its customers about the historic and cultural aspects of en route features. One exception is a book by Mr. W. Coe, a VIA employee, entitled, "Scenic Rail Guide to Western Canada" (Coe, 1982). This is sometimes displayed on VIA Western transcontinental trains, although not always prominently. Moreover, VIA could do more to satisfy the wants and needs of young families, a large potential market segment which now uses the air and/or automobile modes. These young families can be seen today on western transcontinental trains, thus suggesting the existence of an affluent market beyond the younger and older segments.

There are some signs that VIA is beginning to structure itself to pursue new marketing opportunities. According to Pierre Franche, VIA's President and Chief Executive Officer: "...a marketing-minded philosophy is now permeating the whole VIA organization and not merely VIA's marketing department" (Canada, Senate, 1984, p.2). We recognize that a great deal of tenacity is required in any organization to get new product ideas accepted internally, but we believe that if VIA were to sufficiently encourage creative ideas all the way to market implementation, then a doubling of transcontinental train traffic would not be an unreasonable goal -- particularly when one considers the size of the potential domestic market.

4.4 International Tourism Potential

Worldwide economic recession has reduced international visitor traffic to Canada since 1981¹, but long-term prospects for the international market appear favourable. During the latter half of the 1970's, Canada, and in particular Western Canada, established itself as a popular destination for several important "new" markets, prominent among which were West Germany and Japan. With sustained and consistent marketing programs in these and other high potential areas (e.g., the Pacific Rim region), the international visitor market will continue to grow in future.

There are, however, a number of indications that Western Canada's aging tourism infrastructure (not the least of which is VIA's passenger equipment) may not be adequate to cope with future increases in tourism. The highways and townsites located in the parks are becoming increasingly congested with automobile traffic. As the environmental quality of the parks continues to be threatened, there seems to be a growing recognition among managers in the tourist industry that the problems of rail passenger transportation are part of a bigger picture, indeed that the railway passenger system is an important component of a much larger tourism system.

4.4.1. Potential Rail Tourism from the United States

As Table 4-5 indicates, the United States is by far the largest single source of foreign visitors to Canada at present and will continue to be so in the future.

¹From 1981 to time of writing (mid-1984), the Canadian dollar, although falling against the U.S. dollar, has strengthened appreciably against such currencies as the British pound, the French franc and the German mark. This has been accompanied by declines in the number of visitors from these countries. As for the U.S., visitors to Canada dropped in 1982, recovering in 1983.

TABLE 4-5

INTERNATIONAL VISITS BY COUNTRY OF ORIGIN, 1982

(1 or more nights)

United States	85.9%
United Kingdom	3.5
West Germany	1.5
France	1.0
Japan	.9
All other countries	7.2

Source: Tables 17, 18 and 19 Statistics Canada #66- 201.

In 1982, there were 10,462,000 person-visits by Americans to Canada. Most of these were short-term automobile trips and the average expenditure per visit was 180 dollars - far less than the average of 479 dollars spent by visitors to Canada from countries other than the United States.

At present, it is not easy for Americans to gain access to Canada's western transcontinental trains. First of all, there are no direct rail connections to western transcontinental trains for Americans living in the West or Mid-West. In the past, Western Canada was accessible by rail from Chicago and Minneapolis/St. Paul via Moose Jaw or Winnipeg, or from California and the Pacific Northwest via Vancouver. Today travellers must either rent a car or take a bus or fly to Vancouver, Calgary or perhaps Winnipeg. Timing connections when trains are late is often impossible. For Americans beginning a rail trip from the East, there are direct connections but they then face three or four nights of continuous train travel to reach Banff and Vancouver, and twice that for a round trip -- which is something that some people are willing to do, but not everybody. Air/rail combination trips are a possibility, but again connections are a problem and information on such trips is often difficult to obtain from travel agents. Consequently, it is not surprising that most Americans

visit Western Canada either by air or by way of a very long automobile trip.

One of the best possibilities for marketing western Canadian rail services to Americans is with air/rail trip combinations based on packaged tours (bus/rail combinations were ruled out because of the long distances involved). We would expect that travellers using such air/rail combinations could begin or terminate rail trips in any one of the three "Western triangle" cities -- Vancouver, Calgary or Edmonton. Moreover, we would expect that, in addition to established tour operators, airline marketing managers would be very interested in offering such combinations, but only in conjunction with an efficient, reliable and well-positioned rail service.

Finally, we visualize Inside Passage cruises to Prince Rupert with the Skeena rail route forming a second triangle. Excursions to Skagway/Whitehorse might also be possible.

Time did not permit us to thoroughly explore all the above possibilities and we recommend further study. At the very least, a survey of the opinions of airline marketing managers concerning air/rail combinations should be taken.

4.4.2 Potential Rail Tourism from Overseas

There were 1,721,000 overseas visitors to Canada in 1982. Approximately half of these came from four countries: the United Kingdom, West Germany, France and Japan. Table 4-6 contains pertinent information concerning overseas visitors. Because the market potential for western transcontinental train travel for each of the major visitor countries varies so greatly, it will be necessary to briefly discuss each one separately.

TABLE 4-6

OVERSEAS VISITORS TO CANADA
FROM SELECTED COUNTRIES, 1982

(staying one or more nights)

	Number of Visitors to Canada (000's)	% of Overseas Visitors to Canada	Canadian Number of Nights	Average Expenditure Per Visit	Average Expenditure Per Person-night
United Kingdom	425	24%	14.5	\$377	\$26
West Germany	183	11%	15.4	546	35
France	118	7%	12.8	465	46
Japan	115	8%	7.5	607	81

Note: Of the 256,000 overseas visitors to Alberta, 27% were from the U.K., 15% from West Germany, 2% from France and 14% from Japan.

Source: Tables 17, 18 and 19
Statistics Canada # 66-201

The United Kingdom -

The U.K. is the largest overseas market for Canada and will continue to be for the foreseeable future. As such, it should be regarded as a good market for passenger rail, though one which will likely show little growth. It is worth noting that the U.K. accounted for more than one-third of all rail visitors to Alberta from overseas. (Travel Data International, 1983).

Over the years, the U.K. as a percentage of overseas visitors to Canada has been declining. Much of this travel is associated with visiting friends and relatives, but as the "friends and relatives" on both sides of the Atlantic age, there is less-frequent travel. Also, it is a very price-sensitive market, as reflected in the average expenditure per night (\$26 in 1982) in Table 4-6.

West Germany -

The West German market appears to have a great deal of general travel potential for Canada and it also appears to represent a good opportunity for western transcontinental train travel. A fly/drive/rail combination likely would be most appealing to the Germans, given that they tend to be independent travellers preferring to venture off on their own into the less-travelled areas (a motorhome option would be advisable on the "drive" portion of the package). The Rocky Mountains hold great appeal for the West Germans, as does the west's wide open spaces. There is no better introduction to both than a train trip between Calgary (or Edmonton) and Vancouver.

France -

There does not appear to be much market potential for western transcontinental train travel from this country. As Table 4-6 indicates, seven per cent of overseas visitors to Canada come from France, yet only two per cent visited Alberta and only 1.8 per cent visited B.C.. It appears that these visitors are restricting their trips to Eastern Canada, perhaps because of language and cultural reasons.

Japan -

Japan probably represents Canada's best opportunity for overseas tourism development, and is a particularly high potential market for western transcontinental train services. But before this potential can be turned into actual sales, a great deal of marketing analysis, planning and implementation will have to be done, not only by VIA but by a number of

organizations in the Canadian tourism industry. Continued development of this market is not going to be automatic.

In 1982, total trips by Japanese to Canada was 139,447 (including same-day exits) and of this number 92,153 (or 66 per cent) came to Canada via the United States. In 1981, there were 1,170,000 visits by Japanese to the United States. Thus, only about eight per cent of Japanese travellers are including Canada in their North American trips.

One factor that must be considered as Japanese tourism is further developed in Canada is the changing nature of trans-Pacific airline competition. At the present time, CP Air and JAL fly Tokyo-Vancouver, splitting the traffic between them, while a short distance south, three airlines (Thai, United and Northwest Orient) are now competing between Seattle and Tokyo. In brief, deregulation in the United States has increased trans-Pacific airline competition, and the implication for western transcontinental trains is that, until the Japan-Canada Bilateral air agreement is liberalized from the consumer's point of view, rail marketing strategies should be primarily directed towards attracting Japanese travellers up from the United States.

Another factor to be recognized is that marketing channels in the Japanese travel industry are much more concentrated and tightly-controlled than in Canada. As the VIA Rail Task Force Report states: "...powerful (tour) wholesalers have considerable choice of alternative destinations for their mobile Japanese clients. If conditions are not right with the train, or in Eastern Canada as a whole, wholesalers are prepared to go elsewhere." (Currie, Coopers and Lybrand, 1984, p. 22).

The American and Canadian travel industries are in striking contrast to that of Japan. Most North Americans are still independent travellers

who do not require the services of travel intermediaries (e.g., tour wholesalers, tour operators, tour distributors and retail travel agents). Consequently, western Canada's tourism industry is designed largely for the independent traveller rather than the group traveller. Although this situation is changing somewhat, only a small proportion of the Canadian travel industry is involved in intermediary activities, and there is some doubt that many local tourism businesses are equipped to compete in group markets where foreign intermediaries control almost all aspects of their client's trip abroad. Furthermore:

Because of the manner in which they travel - one week trips to western Canada, all taken during peak season, and mostly in groups of 25-40 people - the Japanese run into problems with tourism infrastructure in Canada. Booking of plane seats into and out of Vancouver, train berths and, of course, hotel accommodation pose major problems for wholesalers selling Canada, as well as inbound tour operators. (Currie, Coopers and Lybrand, 1984, p. 22).

The Japanese market is a large one but if VIA is to profit from its development, it will have to apply a great deal of marketing imagination and action, and soon.

5. SERVICE ALTERNATIVES

5.1 Marketing Concepts

Rail passenger transportation is a service product and the task of managing a service organization differs significantly from one that sells goods. For one thing, services are intangible. Consumers are usually unable to judge the quality and value of a service before they purchase. Therefore, a service organization's reputation is more important than if it were offering goods; in other words, when one buys a service, one buys a promise that the offerer will deliver the service in a satisfactory manner. Consequently, there is an emphasis on reputation and trust among service offerers such as doctors, lawyers, bankers, hotels and airlines.

Moreover, in today's North American service economy, managers have broadened their perspective about what constitutes a service. Service organizations used to focus narrowly on the substantive service. Hotels were a place to sleep, restaurants were for food, and railroads were to move passengers from point A to B. It is now recognized that service customers are buying a variety of other service attributes besides the substantive service and that peripheral services often determine much of the value of a service offering.

In their classic textbook, Management of Service Operations, authors Sasser, Olsen and Wyckoff state:

Unfortunately, managers of service firms often think of their products in terms of the facilitating good ('we sell hamburgers') rather than in terms of a total bundle of goods and services that the consumer purchases. Such a simplistic analysis often results in management neglecting the intangibles. A fast-food restaurant that 'sells hamburgers' often has slow, surly service personnel, dirty and unattractive facilities, and few return customers. (Sasser, 1978, p.14).

Consequently, the consumer who buys rail passenger service expects more than the transportation of his body from point A to B. He is buying a bundle of intangible services and service attributes. Some of these might be: security as it relates to the safety of the traveller and his baggage; consistency as to whether the service is reliable (e.g., on-time); attitude of the front-line service employee who deals directly with the customer; conditions of the environment (cleanliness, lighting, heating, air conditioning, etc.); availability with regard to time (frequency of departure) or space (location of departure and arrival points); completeness of the offering (dining car service); and timing or the length of time required to consume the service (e.g., four nights on a train).

It is these kinds of service attributes that determine the quality level of a service offering, and consequently, if a service firm is to be successful in the long run, it is necessary that it establishes, measures and controls its service levels. Moreover, it is necessary that the service firm has an understanding of the cost tradeoffs involved in raising or lowering service levels. It is possible to offer too much, as well as too little, service quality for adequate customer satisfaction.

5.2 Management Considerations

It follows from the above section that the job of a service manager is to plan, organize and control "service delivery systems", i.e., to design processes that produce service attributes that will be regarded as worthwhile to the consumer. In the two sections that follow, we consider the effect that equipment productivity and contract incentives have on designing an efficient and effective transcontinental train "service delivery system".

5.2.1 Operations Productivity

Productivity of existing equipment -- measured, for example, by annual passenger kilometres per car -- is limited by low average speeds, low availability, low passenger capacity (especially in sleeping cars), and a high proportion of necessary but out-moded and inefficiently-designed non-revenue space (e.g., meal, lounge, baggage facilities). Moreover, poor timekeeping -- in particular the likelihood of lengthy delays -- increases the need for additional stand-by equipment to maintain schedules.

New equipment should increase availability and reduce equipment failures en-route, a major contributor to poor on-time performance. Investment in such equipment also provides the opportunity to design for more available space and, in the case of bi-levels, to increase passenger capacity. For long-distance transcontinental service, passenger acceptance will likely dictate lower seating densities than would be appropriate in short-haul service, but the comfort and potential revenue gains from lower accommodation density (e.g., increasing coach seat pitch, i.e., leg room, from 40" to 50") must be balanced against the consequent decrease in capacity and increase in cost per kilometre.

In the 1950's, anticipated traffic levels appeared to justify coaches, sleepers, diners and lounges of traditional design. But with lower volumes, especially in the off-season, greater use of multiple-purpose cars represents a more productive use of train space. The Amtrak bi-level "Superliners" reflect this change in requirements to some extent (e.g., coach-baggage cars). In Canada, off-season requirements for meal and lounge facilities might be met through one bi-level car offering 30-40 dining spaces, cafe or takeout, and a bar/lounge (which might also provide overflow dining capacity). During the peak season, two such cars would

permit the operation of two dining facilities, each offering a different, limited menu but together achieving broad customer appeal.

At \$1.5 million per car and \$2.0 million per locomotive, replacement of existing equipment -- 175 cars, plus locomotives, for the "Canadian" -- requires some \$300 million. This investment could be reduced by a shorter schedule. Nine trainsets (including guard equipment) are required to support the present four-night schedule (78-82 hours Toronto-Vancouver; 87-90 hours Montreal-Vancouver). The more traditional "Canadian" schedule (Montreal-Vancouver in 72 hours) would require seven trainsets, reducing equipment investment to \$230 million. A more ambitious 60-hour schedule would further reduce the requirement to six trainsets or \$200 million.

The feasibility of faster schedules has not been assessed here, but both CN and CP studied schedule-betterment prospects in 1976 and found faster times -- as low as 54 hours -- to be feasible, but only with significant infrastructure improvements or increased interference with freight operations (CPCS, 1976; CNR, 1976). Also noteworthy is CN's 1963/4 transcontinental schedule, which provided historically-best Montreal-Vancouver timings of 66 hours. Amtrak's long-distance trains are operated at average schedule speeds up to 92 kilometres per hour and the Chicago-Seattle "Empire Builder" operates at an average of 79 kilometres per hour. At this speed, the Toronto-Vancouver trip would only take 55 hours. It should be acknowledged, however, that operation over high-volume, mostly single-track lines may make such a schedule infeasible. (For the history of western transcontinental services, including timings, and a comparison with similar American trains, see report: CTC, December 1976).

Faster schedules would also reduce on-board staff costs. For example, a 10-hour reduction in Toronto-Vancouver timings could reduce these costs

by approximately \$1.4 million per year (excluding departmental overheads).

VIA's program of maintenance facility construction is intended to reduce equipment maintenance costs. Savings are to be achieved by gaining more control over the equipment maintenance function and by modernizing facilities and procedures. These savings will be offset to some extent by higher capital costs (including depreciation and the "opportunity" cost of capital invested in such facilities).

Reductions in labour costs may be achieved through re-negotiation of pay basis and staffing procedures. For example, the maximum, unpaid rest period deductible from on-board service crew hours might be increased to a more realistic level. Similarly, steps might be taken to lower the portion of paid time that is not worked, now about 15 per cent of total hours paid. As another example, VIA has achieved reductions in meal car crewing by introducing limited menus. Rationalization of passenger train crews could bring worthwhile savings, perhaps on the order of \$5 million in 1983. However, it seems unlikely that CN or CP will pursue such a change, given the possibility that ensuing labour disruption could affect freight services, and given the provisions of operating agreements that pass these costs on to VIA.

In addition to reducing capital and labour costs, a re-structured operation should include re-deployment of labour to meet customer requirements more closely. For example, the assignment of employee positions to specific cars could give way to assignment to the train as a whole, with particular employees assigned to particular tasks and locations during the trip according to customer requirements. Thus the same employee may at one time be a porter, at another a waiter and at another a supervisor in a children's play area.

Amtrak has made considerable progress in re-negotiating employee contracts to increase efficiency and limit compensation. Changes include:

- 1) In the North-East Corridor, but not yet elsewhere, Amtrak has hired train crews formerly employed by Conrail. In this instance, the dual pay basis (miles, hours), arbitraries and restrictions on road yard work have been eliminated in favour of an hourly rate of pay. Productivity of crews is to be increased from 13 trips/month in 1983 to 17 trips/month in 1985.
- 2) Under the modified food plan, dining car staff have been reduced from 6-7 employees to a lead attendant and two waiters. However, the company has since realized that these cuts were too severe and has restored some staff to the dining cars.
- 3) Amtrak has also found it possible to reduce sleeper staffing to one attendant per two cars. Since these changes affect on-board service levels, resulting cost savings should be weighed against customer acceptance and revenue potential.
- 4) The shopcraft incidental rule has been changed such that a single employee can perform two functions, where one function is incidental to the primary task.
- 5) Police, formerly assigned by location and position, are now assigned only by location, thereby reducing overtime requirements.
- 6) Compensation has been limited by introducing split shifts, compensation for training at straight time only, reduced sick-leave pay-out, and reductions in cost of living allowance.
- 7) Contracts provide that management be limited to the same pay increases as other employees. Also a labour/management productivity council has been formed to deal with such matters as absenteeism, flex-time and discipline.

We noted in Table 3-2 a significant rise in VIA's internal costs since 1980, despite reduced service. This may reflect assumption of responsibilities from the railways, though the railways' charges per unit

of output (e.g., car-kilometre) have not declined over this period,¹ and the number of VIA employees has actually declined. It appears that as the railway system has decreased, it has become increasingly "top-heavy".

Managerial and administrative functions are accentuated by VIA's role as broker and planner for the federal government. Be that as it may, viable western transcontinental service will likely depend on a much leaner management, much closer to its customers and operations. In connection with their study of excellence in American corporations, authors Peters and Waterman comment that the less successful companies are often "besieged by vast interlocking sets of committees and task forces that drive out creativity and block action. Work is governed by an absence of realism, spawned by staffs of people who haven't made or sold, tried, tasted, or sometimes even seen the product, but instead, have learned about it from reading dry reports produced by other staffers." (Peters and Waterman, 1984, p. 120). Elsewhere, they conclude: "The underlying structural forms and systems in the excellent companies are elegantly simple. Top-level staffs are lean; it is not uncommon to find a corporate staff of fewer than 100 people running multi-billion-dollar enterprises." (p. 15).

5.2.2 Incentives

Under present contractual arrangements with CN and CP, there is little incentive for railways to provide good service or to control costs. In 1983, incentive payments for operating western transcontinental services amounted to \$2.8 million or 5.2 per cent of payments from VIA to CP, the principal train operator. Penalties can be charged for poor performance,

¹ In total, railway charges declined marginally between 1981 and 1982, but only with a significant cut in service.

but not so as to reduce total payments below long-run variable cost. Amtrak's incentives, which are less than 10 per cent of payments to contracting railways, seem to have been effective in improving on-time performance of long-distance trains (from 52 per cent on time in 1978 to 81 per cent on time in 1982) while generally maintaining schedule speeds.

Several changes in Canadian contract provisions might improve operating performance:

- 1) Increased incentives, sufficient to justify higher passenger train priorities;
- 2) Increased penalties for delays beyond a defined threshold, such that unacceptable performance results in less than full cost recovery;
- 3) Incentives for schedule improvement.

Incentives should reflect the customer value of good schedule performance and the operating and capital savings to the service operator (VIA), including reduced crewing costs and reductions in capital required for rolling stock and motive power.

One approach would be to pay CP and CN "strictly avoidable" costs (on the Amtrak model, as discussed in Section 2.1 above) and provide sizeable additional incentive payments based on performance.

Incentive revenues may induce railways to invest in infrastructure improvements. Such investment decisions, the costs of which should not be charged to the passenger service operator, would be made by the railways on the strength of incentive revenues. At the same time, such incentives should be guaranteed for a sufficient period of time to justify railway investments for improved schedules.

This approach, which involves a move away from existing costing procedures, might not be readily accepted by the railways or the CTC.

Costing procedures following the CTC's Order R-6313, while developed for a predominantly freight railway system, have become integral to government compensation and regulatory practice for passenger services. Before VIA's formation, the CTC paid 80 per cent of R-6313 costs, under the authority of the Railway Act. However, contracting procedures established for VIA Rail, which now provide for payment of 100 per cent of such costs, are distinct from the CTC's earlier responsibility to compensate CN and CP and need not follow R-6313 procedures as a matter of either legislative or regulatory necessity. Therefore, costing order R-6313 need not be impediment to revised contracting procedures.

An alternative to improved incentives and penalties is legislation, coupled with increased regulation of railway performance. In our opinion, such interventions are likely to discourage a commercial orientation to the passenger business and should be kept to the minimum necessary. However, CN and CP hold a monopoly on track required for passenger operations, and in an unregulated market can dictate both price and performance. Thus, some regulatory attention is desirable to ensure that the costs and quality of railway operation of passenger trains are equivalent to levels that would be achieved by efficient management in a competitive environment.

5.3 Available Equipment

5.3.1 Existing Equipment

Table 5-1 lists cars assigned to the "Canadian" during the peak summer period, and Figure 5-1 shows typical car diagrams. Summer trains typically include 17-20 cars. These cars are now 30 years old and, while mechanically sound, are increasingly costly to maintain. Most of the equipment has been refurbished to some extent within the last 10 years, and

TABLE 5-1

EXISTING TRANSCONTINENTAL EQUIPMENT

<u>Type</u>	<u>Builder</u>	<u>When Built</u>	<u>Most Recent Conversion</u>	<u>Weight (tonnes)</u>	<u>Revenue Passenger Capacity</u>	<u>Cars Nec- essary for Peak Assignment</u>
600 Series Baggage	Budd	1954-55	1980-81	54.5	-	12
100 Series Coaches	Budd	1955	1979-81	55.5	60	22
Cafe Coach	Pullman	1954	1965		72	11
Skyline Coach	Budd	1955	1984	66.4	26	9
Dayniter	Pullman	1950-54	1972-79		52	18
Cafe Coach Lounge	Pullman	1954	1965		44	3
"Manor" Sleepers	Budd	1954-55	1980-82	62.7	26	35
"Chateau" Sleepers	Budd	1954-55	1980-82	62.7	26	20
16500 Series Diner	Budd	1954-55		61.8	-	9
"Park" Sleeper Lounge	Budd	1954-55	1980-82	66.4	10	9
"E" Sleepers	Pullman	1954	1977		24	27

SOURCE: VIA Rail Canada

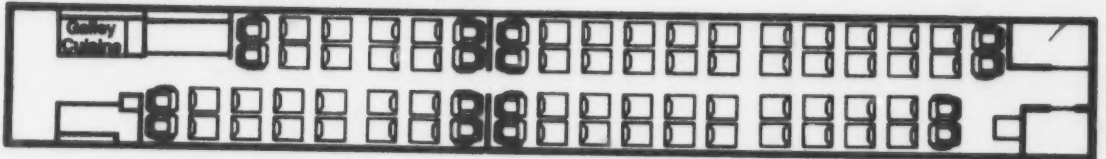
FIGURE 5-1

VIA RAIL CAR DIAGRAMS

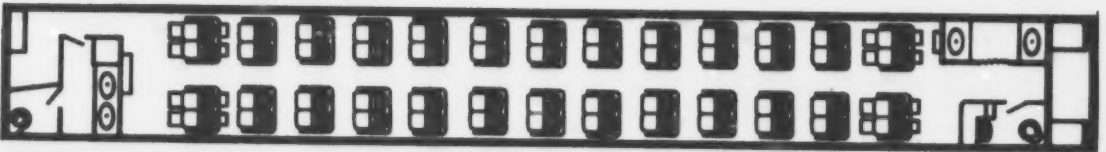
COACH/VOITURE-COACH



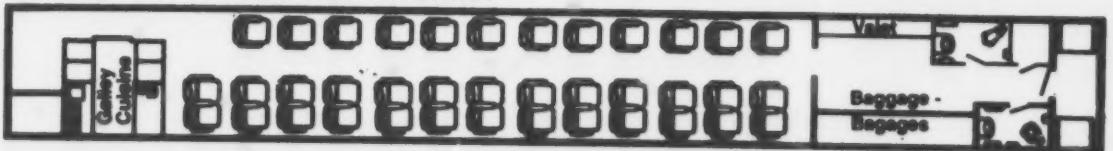
LRC COACH/VOITURE-COACH LRC



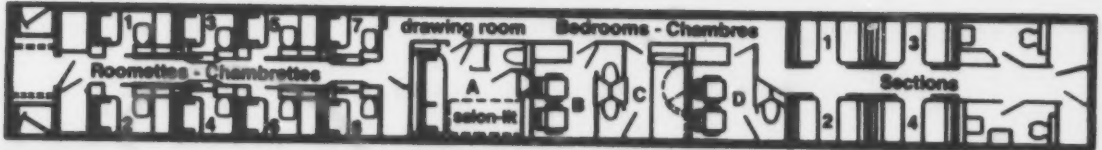
DAYNITER/SUPERCONFORT



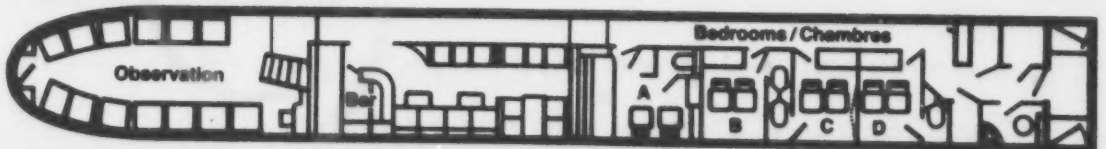
CLUB GALLEY/CLUB RESTAURANT



SLEEPER/VOITURE-LITS



SLEEPER/VOITURE-LITS



is generally refurbished and overhauled on a 5-7 year cycle depending on kilometrage and condition. Continued use of existing equipment is unlikely to be economically or practically-feasible.

An interim option would involve rebuilding cars to permit head-end electric power (HEP) and modern interiors. Amtrak's costs for its "Heritage" rebuilding program in 1978/9 were \$500,000 U.S. per car, including \$200,000 for HEP conversion. Based on Amtrak experience, rebuilding cars will likely result in roughly a 30 per cent reduction in maintenance cost, and a significant reduction in out-of-service cars (from 35 per cent to 10 per cent of the fleet unavailable). Service life for rebuilt cars is expected to be 10-15 years.

If all the 175 cars shown in Table 5-1 were rebuilt at a cost of \$700,000 (Canadian) each, the required investment (excluding motive power) would be \$123 million, equivalent to about \$14 million per year.² Annual maintenance savings would be on the order of \$12 million, so that the investment would result in a marginal worsening of transcontinental financial performance. Although existing motive power could also be rebuilt, it is likely that new motive power would be preferred. Amtrak opted for new 3000 Hp units for its rebuilt "Heritage" fleet.

As subsequent sections show, wholesale rebuilding of transcontinental equipment is an inferior alternative to new equipment. The equipment's interior layouts still would be outmoded, necessitating long, costly trains. Moreover, delaying introduction of new equipment for the expected service life of rebuilt cars (10-15 years) would defer significant equipment cost savings and opportunities for full service modernization.

²Service life 12 years, salvage value 10 per cent of initial cost, interest at 6 per cent (constant dollar interest rate)

Selected cars might, however, be rebuilt for use in a transitional service and later used in a periodic (e.g., charter) "heritage train" service.

5.3.2 New Single Level Cars

Amtrak is developing new single-level cars (including sleeping and dining cars) for use in long-distance eastern routes where clearances are not sufficient for bi-level cars. The new cars, which are to be assembled at Amtrak's Beechgrove, Indiana, facility from Budd shells, incorporate a modular design to lower manufacturing costs. Sleeper interiors would be manufactured elsewhere in 2.06 metre modules for insertion in the shell. Amtrak's prototype program includes testing of four sets of trucks, three air brake systems, three airconditioning systems, and a new toilet system.

The sleeping car is to provide 34 berths in 14 double roomettes, two bedrooms and one special room. The bedrooms have shower stalls (as in the Australian transcontinental train), a feature of particular interest for multiple-night travellers. The roomettes are somewhat small for double occupancy, but provide relatively-high density accommodation for price-sensitive travellers, who form a large portion of Amtrak's long-distance market. Amtrak has found that some passengers prefer toilets in rooms, and are prepared to pay about \$10-\$15 more per night for them. However, while the toilet in the bedroom is enclosed, it is not in the double occupancy roomette.

A Canadian alternative to the Amtrak single-level car is the Bombardier LRC ("Light-Rapid-Comfortable"), now in service in the Quebec-Windsor corridor. New long-distance interiors would have to be developed, and the design of sleeping cars might be more difficult because of the LRC's canted sides. The LRC's troublesome banking system, while

promising improvement in schedules, seems unlikely to be sufficiently-reliable for long-haul service and is likely to incur high maintenance costs. Use of LRC motive power would complicate maintenance, since there is no Bombardier motive power in regular operation in Western Canada.

If western transcontinental trains were re-equipped with new single-level cars, on a one-for-one basis at a unit cost of \$1.5 million (1983 dollars), the car investment would be \$262.5 million, equivalent to an annual cost of \$20.1 million.³ Annual savings in operating costs (decreased sleeping car kilometres) and car maintenance would be approximately \$12 million. On this basis, service costs would increase by \$8.1 million per year.

If Amtrak's high-density sleeper design were adopted (34 berths), capital requirements would fall to \$230 million (equivalent to \$17.5 million per year) and operating savings would increase to \$20.9 million, for a net decrease in service cost of \$3.4 million per year. It is possible that, in redesigning cars, economies could be achieved elsewhere in the train (e.g., more use of multiple purpose cars). Also, additional costs may be offset by increased revenue from more attractive and functional space, but it must be acknowledged that replacement of lower-density sleepers with much higher-density cars may limit customer acceptance.

As with the rebuilding of existing equipment, this option suffers from the capacity constraints imposed by single-level cars. Although utilization of car space can be somewhat increased, the opportunity for a major breakthrough in cost effectiveness is limited.

³ Service life 25 years, 10 per cent salvage, interest at 6 per cent.

5.3.3 New Bi-level Cars

In the United States, both Budd and Pullman have produced bi-level cars. The Santa Fe first introduced a Budd bi-level in 1954 at a cost of \$275,000 per car (about \$1.2 million in 1983 values), following with orders of 71 cars (mostly 72-seat coaches and dining cars). "Superliner" equipment, ordered by Amtrak in 1976 and manufactured by Pullman Standard, is of a similar design. (See Figures 5-2 and 5-3). In 1958, Pullman had manufactured bi-level cars in a higher-density (96 passenger) configuration for the Chicago and Northwestern Railroad's medium-distance Chicago-Green Bay service.

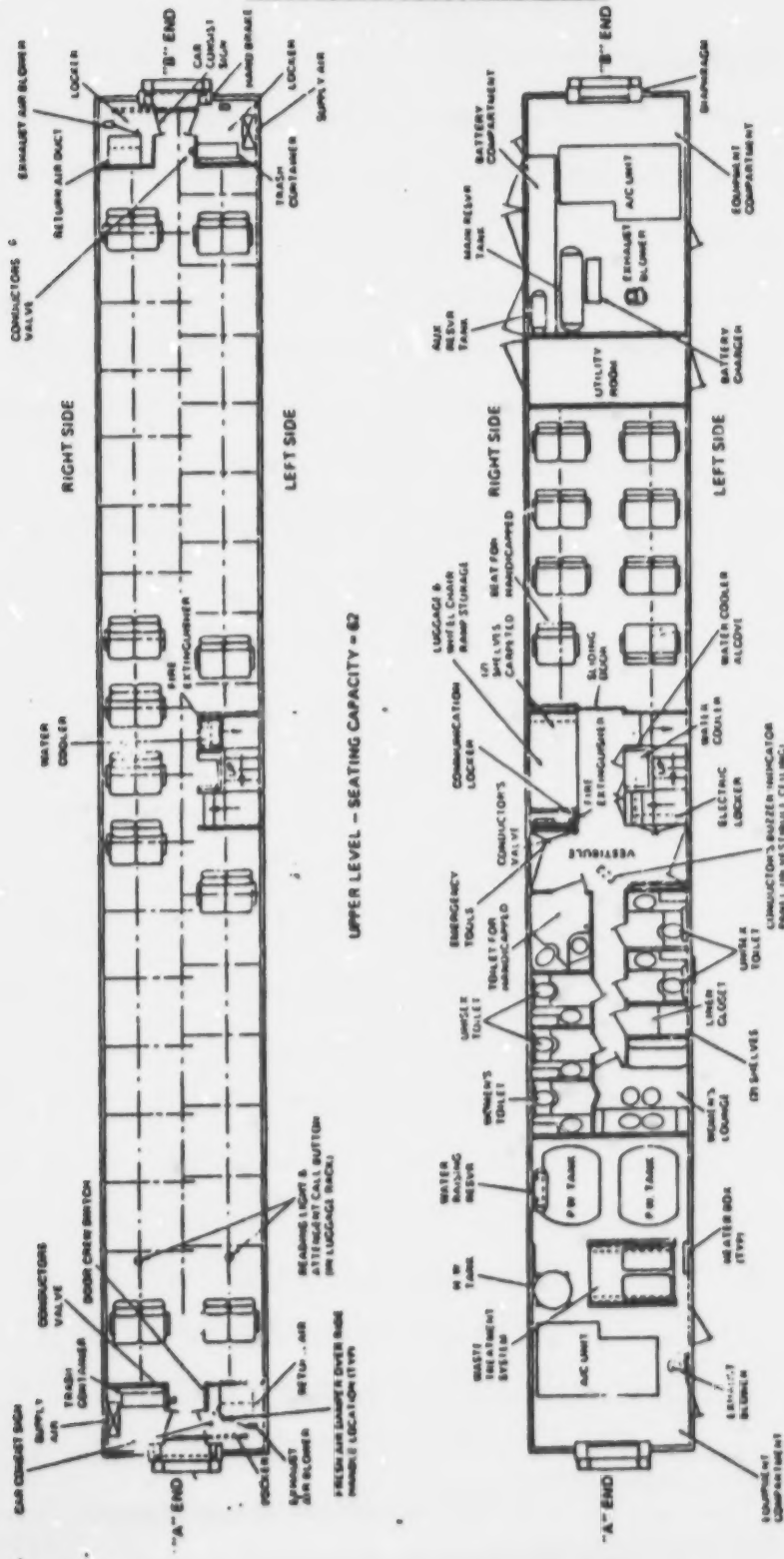
Amtrak's Superliners have suffered some teething problems. Most important of these problems were the trucks, which were of a European design and not entirely suited to North American service on track of varying quality. Amtrak is now experimenting with a Canadian "DOFASCO" truck on the Superliners.

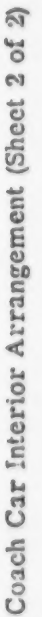
Overall, the Superliners are now performing well for Amtrak, and are well-received by customers. Pullman-Standard is no longer in the passenger car business, but Bombardier has acquired licenses for the designs.

A more recent and innovative car design is the Hawker Siddeley Can-Car bi-level car, the commuter version of which has been operating successfully in GO Transit service (see Figure 5-4). This car permits coupling with single-level cars, avoiding the need for transition cars during the phase-in period. A medium and long-distance version of these cars is undergoing development over the next two years for demonstration purposes. Combination coach/sleeper and meal/lounge cars will be produced at Thunder Bay, Ontario by Can-Car, now a subsidiary of the Urban Transportation

FIGURE 5-2

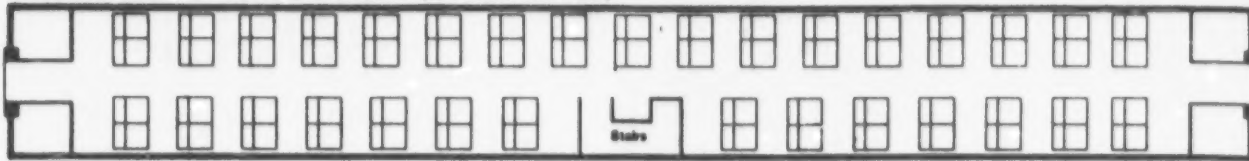
SUPERLINER COACH INTERIOR



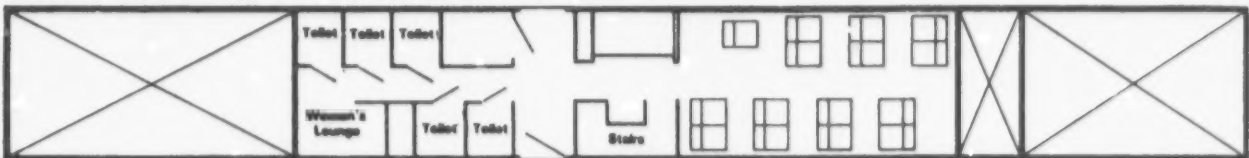


AMTRAK CAR DIAGRAMS

SUPERLINER BI-LEVEL COACH (UPPER LEVEL)



SUPERLINER BI-LEVEL COACH (LOWER LEVEL)



SUPERLINER BI-LEVEL SLEEPER (UPPER LEVEL)

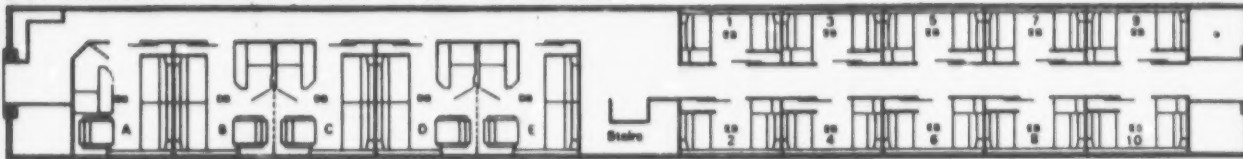
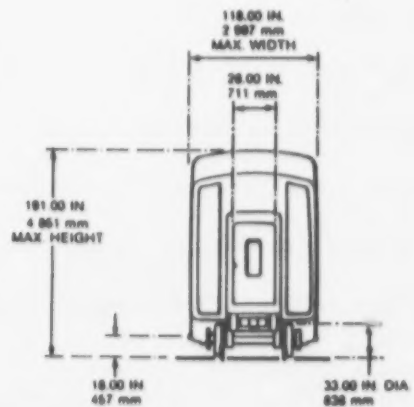
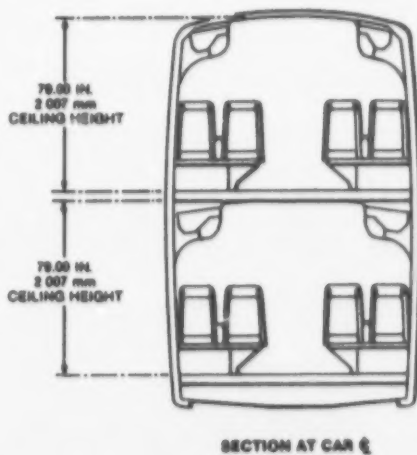
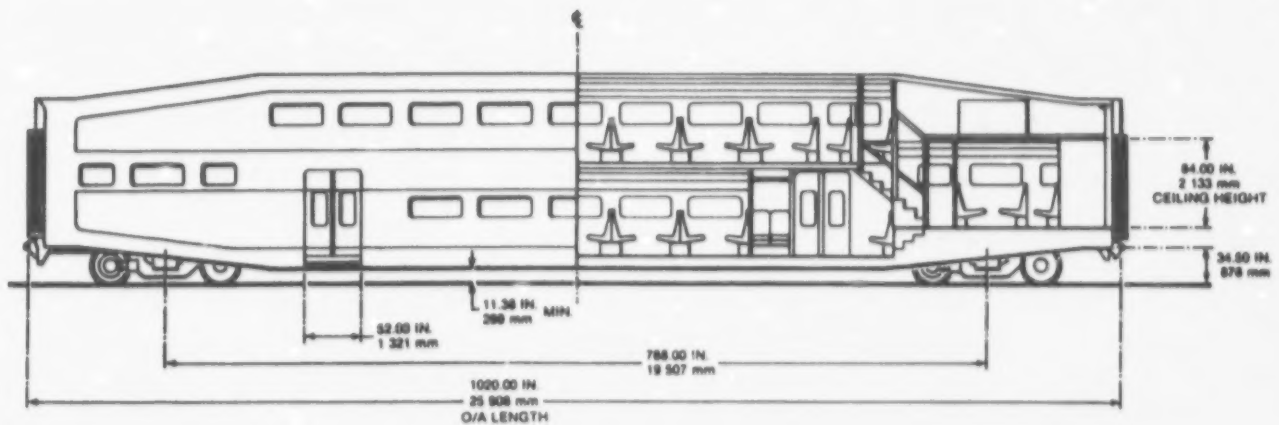
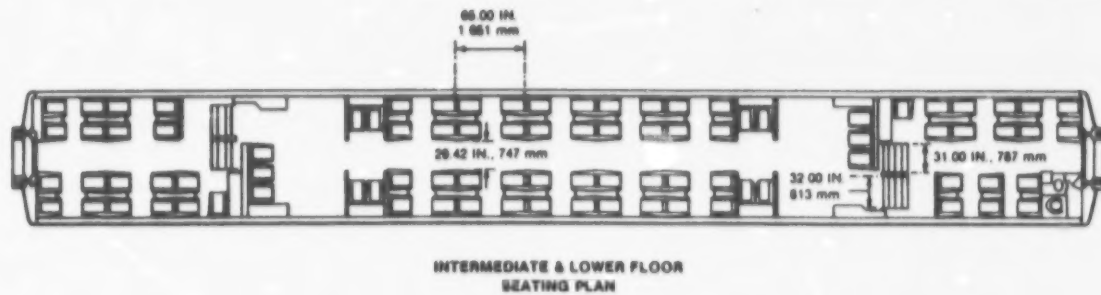
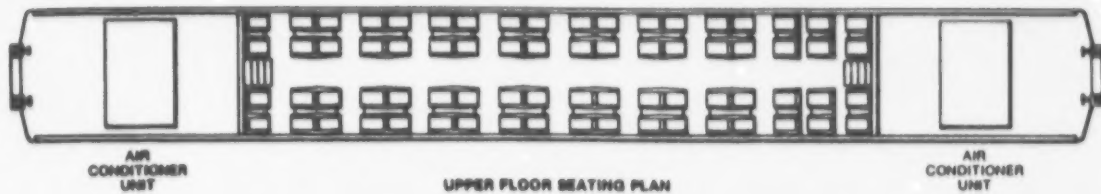


FIGURE 5-4
UTDC BI-LEVEL GO CAR DIAGRAMS



Development Corporation (UTDC), for operation on the Ontario Northland Railway.

UTDC claims several advantages for the "GO" car over the Superliners. The Superliner features only one centre door for loading and unloading and relatively narrow stairwells, while the GO car has access at both ends and large stairwells. Cleaning is also said to be more difficult than for the GO cars. The GO car incorporates features designed to simplify maintenance, and is light in weight, due to aluminum construction.

In bi-level design, upper deck sleeping accommodation presents significant design challenges. Plumbing for toilets is difficult (although Amtrak currently is retrofitting Superliner upper-level rooms with toilets), and the low ceiling height limits space for the upper bunk in double roomettes. In the GO car, bedroom or single-roomette accommodation could be placed on the lower deck, with the double bunks placed in the intermediate decks which have somewhat greater ceiling height.

Table 5-2 compares the two bi-level designs with a typical single-level car. Generally, bi-levels offer a 30 per cent capacity increase, although in the case of the 44-berth Superliner sleeper, the increase is close to 100 per cent compared to the average existing sleeping car. Amtrak has suggested that the Superliners offer more space than the GO car, but an approximate measurement based on the car diagram did not bear this out. (This measurement, however, may not adequately reflect unavailable or low-quality space.) Amtrak has found little difference in maintenance costs between its single-level Heritage fleet and the Superliners. The weights shown in Table 5-2 suggest that operating costs could be somewhat higher

TABLE 5-2

SINGLE-LEVEL/BILEVEL CAR COMPARISON

(Based on Coach Configurations)

	<u>UTDC/Can-Car Bilevel</u>	<u>Superliner Bi-Level</u>	<u>Typical Single Level</u>
Overall Length (metres)	25.9	25.9	25.9
Interior Width (metres)	2.73 - 2.86	2.91	2.7 - .9
Estimated Usable Space (sq.metres)	97.7	92.4	65-70
Ceiling Height (metres)	2.007-2.133	2.024 centre	approx 2.8 at car
Car Height over Rail (metres)	4.851 (commuter) 4.902 (intercity)	4.915	4.115
Car Weight (tonnes)	49 (commuter)	64.5	59

Source: UTDC, Amtrak and VIA

for the Superliners than for the GO bi-levels.⁴ However, development of the GO bi-level car to include accommodations and other features required for long-distance service would increase car weight, thereby reducing the weight-related advantage over the Superliner.

We have not attempted to definitively evaluate the relative technical merits of the two bi-level designs. In such an evaluation, noise, vibration and ride quality at both lower and upper levels, and maintenance costs and service life for the aluminum and stainless steel designs, should be compared.

Acquisition cost estimates for bi-levels vary from \$1.6 million for the coach configuration to just over \$2 million for sleeper and diner configurations. The existing western transcontinental fleet could be replaced for \$229.6 million, equivalent to an annual cost of \$17.5 million. Operating and maintenance savings would amount to \$32.9 million,⁵ for a saving net of annual capital cost of \$15.4 million. These figures indicate that bi-level equipment is an attractive option, but would not by itself generate a dramatic turnaround in western transcontinental service costs. Of course, new equipment would significantly enhance the revenue potential for these services, and, taken together with other cost saving measures, would contribute to a significant overall improvement in financial performance. As mentioned above, an important additional advantage of the bi-level car which is not reflected in these estimates is that for a given train length, 30 per cent more passenger capacity is available compared to

⁴ Weight affects fuel usage and road maintenance costs.

⁵ These figures assume a car weight of 59 tonnes. A lower weight (e.g., the UTDC car) would increase savings somewhat; a greater weight (e.g., the Superliners) would decrease savings somewhat.

the single-level cars. During the summer, when demand for service is strong, a bi-level train could attract additional traffic without requiring an extra train.

These results assume no increase in the density of accommodations (per square metre). If bi-level sleeper design followed the Superliner design (44 berths), additional cost savings would result, increasing net savings from \$15.4 million to \$22.6 million per year.

The remainder of this report adopts bi-level cars as the basis for longer-term transcontinental service modernization.⁶ In doing so, we recognize that there will be a transition period before new equipment can be introduced, during which interim service arrangements must be made. Both the UTDC and Superliner cars will require some modification for Canadian service, including such items as interior accommodations and service facilities. At the same time, there is a risk of overdesigning for Canadian service -- essentially creating an entirely new car -- when existing cars can be adapted relatively quickly. Delay will result in loss of operating cost savings and, potentially, deferral of overall system modernization.

The above analysis is not sufficiently-detailed or comprehensive to indicate a preference between the UTDC and Superliner car. The UTDC car offers several advantages (Canadian design, lower weight, compatibility with single-level cars), but these must be weighed against the somewhat better-known Superliner design. Either car would likely require some modification. UTDC appears to have the head start, but the extent of modification likely would be less for the Superliners.

⁶ We have not confirmed that such cars can meet existing clearance restrictions, but it is unlikely that serious problems would arise. The UTDC car is somewhat higher (4.9 vs. 4.84 metres) than the CP dome cars.

An important factor will be the ability of the car manufacturers (CanCar and Bombardier) to manage effectively the development, testing and implementation of new equipment designs, with a minimum of in-service teething problems. Having experienced serious technical problems with the LRC, VIA can be expected to emphasize this requirement. This consideration, together with the desirability of early improvements in operating efficiency, indicates that a limited modification program, which would not necessarily seek a technically-optimal design, appears to be economically more efficient than a lengthy prototype development program.

Although this study did not evaluate in detail the time required to introduce new equipment, a concerted effort to define quickly customer requirements for interior accommodations and to establish other technical requirements should permit full introduction of equipment over a 4-6 year time frame. Such a schedule presupposes commitment of the service operator and government to an early agreement on service strategy and to development of specific implementation plans. Further delay, say to a 10-15 year implementation schedule, would result in a loss of equipment-related savings ranging from \$100 million to \$200 million (1983 values), depending upon the delay and bi-level equipment option chosen. Opportunities to develop tourism and industrial manufacturing potential would also be delayed, and associated benefits to the economy lost.

A July 6, 1984 media release by the Federal Minister of Transport announced that VIA would lease a bi-level Superliner train set from Amtrak and operate it as an experiment over the newly-restored Winnipeg-Edmonton "Panorama" route between September 15 and December 1, 1984, and between January 1 and Easter of 1985. The train set would consist of a locomotive, coach, baggage-coach, 44-berth sleeper and diner. According to the

release, the bi-level equipment would enable more people to be carried in a shorter train and result in a large savings should all western transcontinental trains be so equipped.

5.4 Service Alternatives

Each of the factors which define service alternatives -- routes, schedules, fares, equipment, on-board services, support services, etc. -- is subject to numerous variants. To examine all (or even most) of the possible combinations was impractical in the time available. Thus, what are shown as distinct alternatives are really patterns of change which, if pursued by government agencies as part of railway passenger policy, are likely to result in specific outcomes within certain ranges. In taking this more summary approach, the changes identified are less than those that would be pursued under effective commercial management and, in this sense, the results of such an analysis are conservative with respect to the prospects for improved performance.

The following sections discuss briefly the principal variants in service configuration which we have evaluated. These variants do not address more general problems (railway passenger policy, system management, etc.) which were discussed in Section 3 and are re-considered in Section 7.

In developing service alternatives, we had in mind three basic approaches. First, we could live with the existing system, the "Existing" approach. Equipment would be maintained as needed, including ad hoc rebuilding. Services would be adjusted in the light of declining traffic, with special services instituted as a temporary basis to meet short-term political pressures. Costs would continue to rise, eventually to the point at which public opinion would likely accept widespread discontinuance.

A second alternative is to adopt certain obvious solutions (e.g., new equipment) and work gradually towards improvement of operational costs, a "Limited Change" approach. These changes would be implemented largely within the existing technical and organizational framework for railway passenger services. In many respects, this approach reflects the opportunities open to VIA.

Finally, we have considered a more ambitious alternative, which seeks major modifications in service patterns and in the deployment of resources (e.g., train manning), a "Major Change" approach. An important part of this approach is the integration of all aspects of the passenger business, with reference to customer requirements and maximum operating productivity. Inevitably, this approach defies precise quantitative analysis, but within certain limits, revenues and costs can be estimated, as we have done in this report. But it is difficult to quantify revenue that will be gained by improved image or the costs that will be saved by efficient deployment of a happy, motivated workforce.

5.4.1 Routes

As passenger traffic began to weaken in the 1950's, railway planners matched capacity to demand by reducing frequency, primarily on existing routes. Routing of trains only became an important issue in the 1970's when it became apparent that the costs of supplying separate trains to different parts of the western transcontinental network were increasing quickly while traffic and revenues continued to stagnate or decline. With present traffic, consolidation of train services (e.g., the present "Canadian" or the more extensive system recommended by the C.T.C. in the 1977 Final Plan) is essential. However, with new equipment, improved

service and effective cost control, traffic increases could again justify separate services on CN and CP lines across Canada. Such a separation would avoid or simplify train coordination problems, while permitting service to a broad network of communities.

We have considered routes which emphasize a continuous western transcontinental train serving both pure transportation and tourist markets, and shorter routes such as the "triangle" route proposed by Transport 2000, which mainly serves "transmountain" tourists and which might supplement transcontinental services. We have not considered a discontinuous system of transcontinental day trains, because these trains would lose their separate identity from other modes of transport and hence lose traffic, and would likely not save costs in proportion to the reduction in service offered. Moreover, Transport Canada and VIA have identified only one route in western Canada having potential volume for a meaningful intercity daytime service: Calgary-Edmonton (VIA/T.D.C., 1981).

The following routes are representative of the principal choices to be made, but are by no means exhaustive. In developing these routes, we considered several important transcontinental "gateways" -- Toronto (and possibly Montreal), Winnipeg, Calgary, Edmonton and Vancouver. Each of these points has good air service, particularly from international origins and is pivotal for development of air/rail tourist packages. Also, intermediate points show significant traffic turnover, most evident at Winnipeg (hence a break in service there might be feasible),⁷ but less so at Edmonton (for which through train service is more important).

⁷ This approach might be more costly than the present practice of adding and subtracting cars at major points.

We have not considered connection possibilities in detail. However, connections to Amtrak (e.g., a Seattle-Vancouver service, linking with the Chicago-Seattle "Empire Builder", and direct connections to Chicago, through restoration of a service such as the traditional Chicago/St. Paul-Winnipeg "Winnipeg Limited") could be worthwhile. Amtrak is currently considering such a Chicago-Winnipeg service.

5.4.2 Trans-Continental Routes (See Figure 5-5)

A. The "Canadian" -

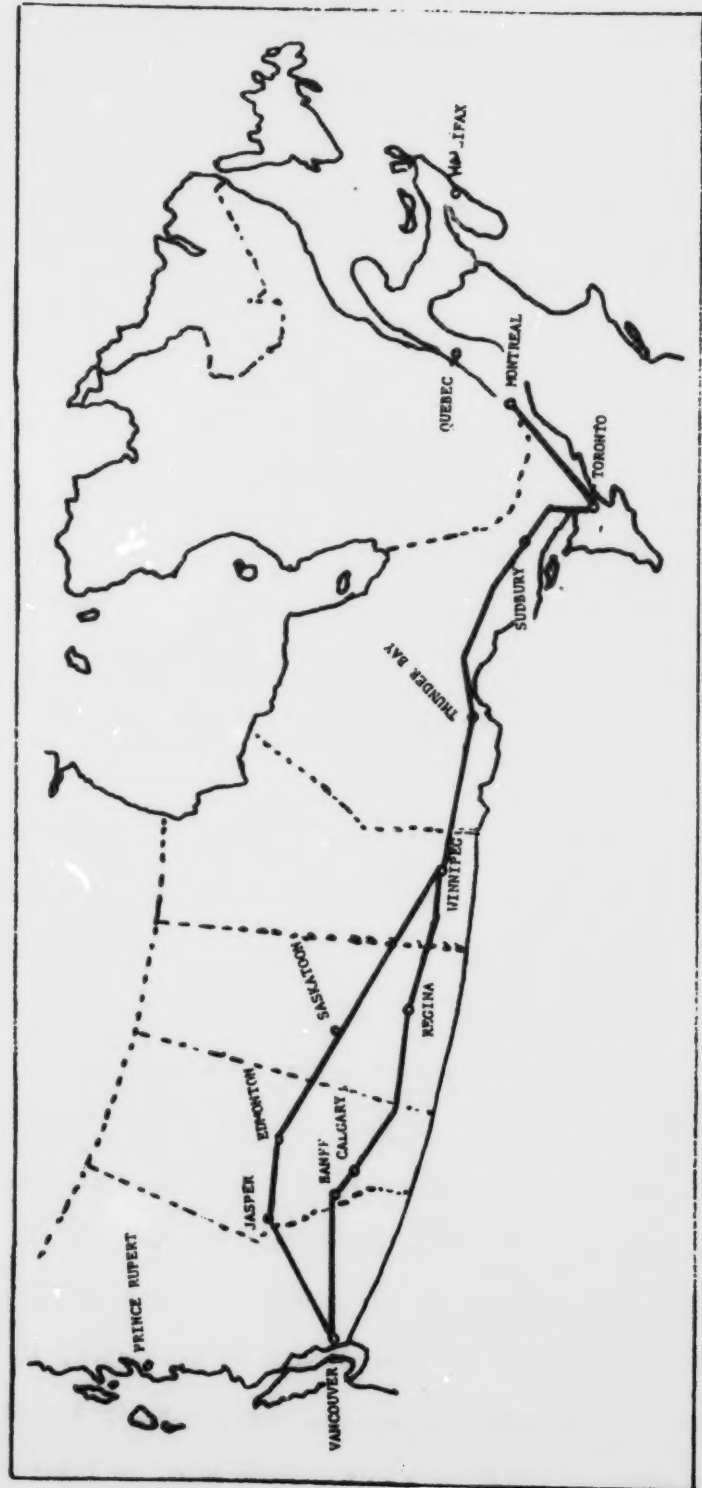
This is the existing transcontinental service, essentially a Toronto-Vancouver train with through cars from Montreal operated in Montreal-Toronto corridor services, but without integrated service on the northern CN line in Western Canada.

B. The "Canadian" and the "Super Continental" Consolidated at Winnipeg -

This service is essentially that proposed by the CTC in 1977. A single train would operate between Toronto and Winnipeg (mostly over CP), with separate sections on CP and CN lines west of Winnipeg. Montreal service could be handled by through cars on Montreal-Toronto trains, as now, or with Montreal-Sudbury service via Ottawa, as in the CTC's Final Plan (and thereby improving the utility and "national image" of the service). As with other options involving train consolidation, on-time reliability would be crucial to a successful operation, and to reduce susceptibility to train delay, this alternative might include a break in service at Winnipeg with eastern and western trains separately scheduled. New equipment and effective incentive contracting would improve on-time performance and thereby enhance the feasibility of train consolidation and

FIGURE 5-5

WESTERN TRANSCONTINENTAL ROUTES



schedule coordination. With significant increases in traffic, it is possible that consolidation would not be required and that separate trains could be operated between Central and Western Canada.

5.4.3 Supplementary Transmountain Routes (See Figure 5-6)

A. The Foothills Triangle -

Trains would operate from Vancouver to Calgary and then on to Edmonton on CP track, returning to Vancouver on CN (or in the reverse direction). This route would require minor infrastructure improvements in Edmonton. A three-day rail package tour might be offered for longer tours involving overnight visits to Calgary and/or Edmonton. This service also could appeal to a regular transportation market between Vancouver and Calgary/Edmonton, either in dayniter or sleeper accommodation.

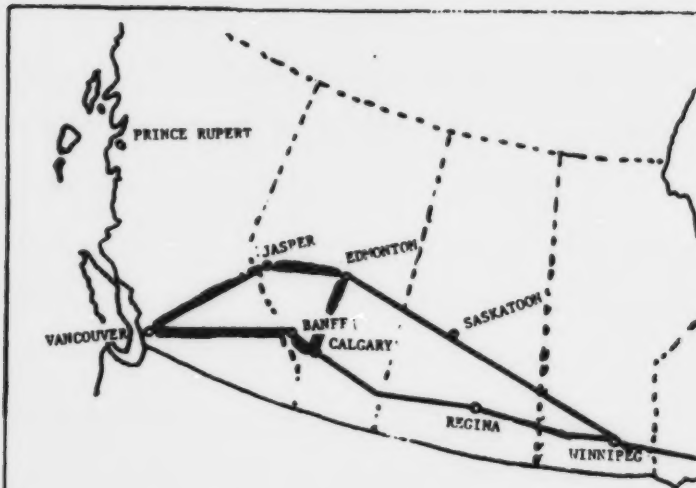
Such a train could be integrated with bus service on the Banff-Jasper Icefields Parkway, creating an additional "Icefields Triangle" route for tourists. This development would require close adherence to scheduled arrivals and departures at Banff and Jasper.

B. The Foothills and Skeena Triangles -

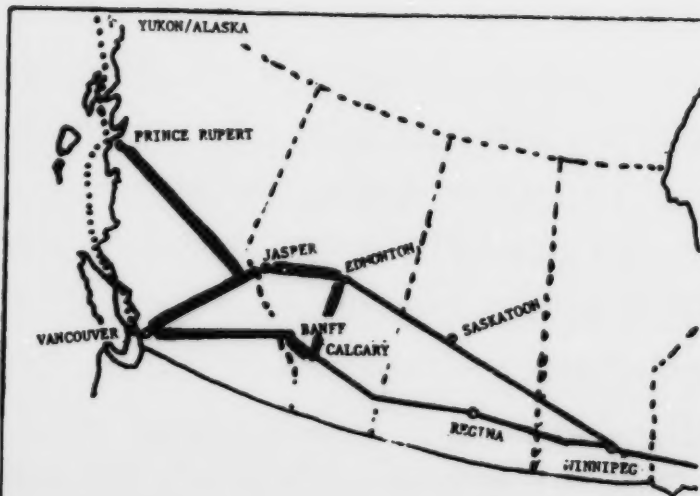
This triangle would be supplementary to the "Foothills Triangle" described above. Trains on the Skeena Triangle would operate in both directions from Vancouver to Jasper and continue on to Prince George and Prince Rupert, where passengers could take the coastal ferry service to Vancouver (or, as an offshoot, to Alaska and the Yukon). Although we feel that this kind of tour should be developed, it is likely that traffic on this route would be less than on the basic Foothills triangle or on through transcontinental services. Therefore, to limit costs, consolidation of

FIGURE 5-6

TRANS-MOUNTAIN ROUTES



A. The Foothills Triangle



B. The Foothills and Skeena Triangles

trains between Vancouver and Jasper with through sleeping cars between Vancouver or Edmonton and Prince Rupert is assumed.

5.4.4 Schedules

We have not developed specific schedules for the trains described above, except where a rough check was needed on the general feasibility of the route. Because tour packages could include overnight stays in some locations and because an effective incentive system should increase the availability of faster timings, a variety of schedule options should be available to solve difficulties presented by existing schedules.

We do, however, feel that the revenue and cost consequences of faster transcontinental schedules should be estimated. For this purpose, the existing four-night schedule is compared with a three-night schedule (the old "Canadian" schedule) and, for the "Major Change" scenario, with a faster schedule in the neighbourhood of 60-65 hours from Toronto to Vancouver (essentially CN's 1963/4 schedule).

The CTC traditionally has viewed daily service as the minimum acceptable for transcontinental trains. Some of the supporting arguments advanced are: that these trains also serve important local segments, which benefit from, or even require, every day service; that tri-weekly service often leads to expensive deadheading of crews because of longer waits for trains returning to home base; and that many of the overhead costs are not reduced proportionally with the decrease in frequency (e.g., equipment costs).

Then there is the marketing factor. The example of Amtrak's "Empire Builder" mentioned earlier in this report suggests that daily service leads to much improved ridership, although in this case the credit certainly must

be shared with the introduction of Superliner bi-level equipment. Finally, the VIA Rail Task Force report predicted annual ridership of 128,000 for a daily Vancouver-Edmonton service, compared with only 44,000 for a tri-weekly service.

However, we believe that less-frequent off-peak service deserves some future examination. By choosing preferred departure days, it might be possible to serve a substantial portion of the existing market, although traffic loss no doubt would be experienced.

5.4.5 Fares

Due to time constraints, this study did not examine the potential for adjusting prices to increase revenue and to shift traffic from peak to off-peak periods (although analysis for the "Major Change" scenario assumes a modest increase of revenues per passenger kilometre from such adjustments).

5.4.6 Equipment

As discussed earlier (Section 5.3.3), bi-level equipment is the most efficient choice for western transcontinental services and has been adopted for analysis of longer-term service alternatives. The need for a transitional service strategy is discussed ahead in Section 7 and it is acknowledged that should additional transmountain service be offered, limited use of single-level equipment might be cost-effective (i.e., when volume is sufficiently low, the capacity advantage of the bi-level is less important).

5.4.7 On-Board Services

Changes, such as VIA is now pursuing -- reduction of crews and adjustment of the pay basis -- are incorporated in the "Limited Change" scenario for on-board services. Service quality would be similar to that on existing VIA trains. As an alternative, the "Major Change" scenario assumes that sleeping car porter service is converted to a "maid service" (reducing the number of attendants per passenger by half); that meal service is provided by private caterers; and that more staff are assigned to the trains as a whole rather than to specific cars. Service to passengers would be more varied than at present, particularly in the peak season, and would reflect a hotel/restaurant style of service.

Also, with staff having more flexible duties, more variety in on-board activities could be achieved (e.g., on-board interpretive programs through the parks; presentations on Canadian history and geography; children's play hours; etc.).

5.4.8 Other Operating Changes

For the "Major Change" scenario, we have assumed lower costs for train crews, either because crewing would be rationalized or because the difference between freight and passenger crew costs would be seen as a railway system overhead. Such changes, together with schedule improvements, are unlikely to be feasible without significant incentives or penalties which will afford CN and CP a good prospect for profitable operation of good service and a significant disincentive for poor service. For example, incentives might amount to 20 per cent above base costs, if performance targets were met, or 20 per cent below base costs if substantially-inferior service were provided. The additional resources for

incentives can be gained in part from streamlining of passenger system overhead and from review of railway costing methods, but a significant portion (say 10 per cent) will be an addition to actual costs, justified on the assumption that improved customer service levels will result in revenue increases.



6. FINANCIAL AND ECONOMIC EVALUATION OF SERVICE ALTERNATIVES

6.1 Financial Performance

6.1.1 Traffic and Revenue Scenarios

The traffic scenarios assume a reduction of 30 per cent in traffic by the mid-1990's if the "Existing" approach to transcontinental services continues, a 30 per cent increase in traffic with "Limited Change", but including new equipment, and a 100 per cent increase resulting from a "Major Change" initiative to overhaul services. (Should the "Super Continental" be reinstated in this modernized form, it could expect to attract roughly the same number of passengers as a modernized "Canadian".)

In 1983, VIA's western transcontinental service revenues were as follows:

	Revenue (millions \$)
Transportation	27.7
Pass	2.9
Accommodations	10.6
Meal Service	5.4
Mail and Express	.4
Total	46.9

For the "Existing" approach and "Limited Change" scenarios, revenues have been increased in proportion to changes in traffic. For the "Major Change" scenario, it has been assumed that adjustments in pricing and development of incidental revenues (station concessions and additional customer services, both on-board and at stations) will result in improvement of revenue yield of 10 per cent. Because the service operator would not be providing meal services directly, meal service revenue is not shown for the "Major Change" scenario.¹

¹ The operator could gain some revenue through rental of space to caterers.

Table 6-1 provides traffic and revenue estimates for routes and scenarios studied.

TABLE 6-1

ESTIMATED TRAFFIC AND REVENUES (MID-1990'S)

	<u>Passengers (000's)</u>	<u>Passenger-km (millions)</u>	<u>Revenue (millions 1983 \$)</u>
1983 - Actual:	598	729	46.9
<u>TRANSCONTINENTAL:</u>			
Existing Approach			
A. Canadian	385	469	30.2
B. Canadian/Super Cont.	840	974	62.8
Limited Change			
A. Canadian	715	871	56.1
B. Canadian/Super Cont.	1560	1808	116.4
Major Change			
A. Canadian	1100	1340	84.0
B. Canadian/Super Cont.	2400	2782	174.4
<u>ADDITIONAL TRANSMOUNTAIN:</u>			
Existing Approach			
A. Foothills	155	249	16.0
B. Foothills/Skeena	216	325	20.9
Limited Change			
A. Foothills	288	462	29.7
B. Foothills/Skeena	406	613	39.5
Major Change			
A. Foothills	444	710	44.6
B. Foothills/Skeena	616	929	58.3

Estimates of passenger flows for each of the routes and scenarios were based on extrapolations of historical link volumes, and estimates of

average trip length were used to obtain passenger volumes. This approach is somewhat less accurate than estimates based on origin-destination data, which as mentioned earlier were not available, but the errors introduced are not large and are in the direction of understating traffic and revenue.

Traffic for "transmountain" routes reflects historical volumes across the Rocky Mountains on "transcontinental" trains. However, these volumes could only be achieved in addition to volumes carried on transcontinental trains with substantial marketing effort and overall traffic growth. In Section 6.1.3, the effect on financial results of more modest traffic levels is shown.

One approach which might be used in future evaluation of the market for western transcontinental service is illustrated by the Western Intercity Study ("WICS") (VIA/T.D.C., 1981). WICS was a joint undertaking of VIA and Transport Canada's Transportation Research and Development Centre, with participation by the prairie provinces. The primary purpose was to assess the merits of operating intercity passenger trains between the five largest prairie cities: Winnipeg, Saskatoon, Regina, Edmonton and Calgary.

The analytical techniques used were conceptually-similar to "new product" models used in market research for consumer goods. Real and hypothetical transportation products were described to potential consumers during personal interview sessions. Each consumer response was observed and interpreted as preferences that were subsequently logged into a research model. On the basis of these preferences, the model projected the responses of each consumer surveyed to changes in the new product. The research output was a modal share projection and estimated passenger demand level for several improved rail systems.

The WICS study also provided two primary conclusions having indirect implications for design of longer distance services: that in only one Western corridor (Calgary-Edmonton) was there sufficient potential for a frequent, high-speed intercity daytime service; and that in two corridors (Winnipeg-Regina-Calgary and Winnipeg-Saskatoon-Edmonton), there was a "limited market potential" for 100 km/h, low-frequency service. A Winnipeg-Saskatoon-Edmonton service would attract 135,000 passengers by 1985 and 170,000 by 1990 (excluding transcontinental passengers to and from the East and domestic tourist potential). For Winnipeg-Regina-Calgary, these figures were 90,000 and 110,000 passengers, respectively. While these numbers would be unlikely to support dedicated, daytime intercity trains on these routes (provided that such routes could realistically be covered without overnight segments), they do suggest a sizeable supplementary market for re-equipped and reliable western transcontinental trains over these segments.

6.1.2 Costs

Appendix A presents our costing method in detail. Several steps were involved in cost estimation:

- . estimation of train consists appropriate to the various traffic scenarios and routings;
- . development of output units (train-kilometre, car-kilometre, etc.);
- . development and application of unit operating costs;
- . estimation of equipment requirements, associated capital costs, and equivalent annual costs.

Train handling data for 1983 and 1981, split by coach, dayniter and sleeper passengers, provided the base from which traffic for the three

scenarios was estimated. These data were further subdivided into peak, off-peak and shoulder periods.²

Output units were estimated, by link, period and scenario for major equipment types, and were multiplied by unit costs (dollars per car-kilometre, train-kilometre, etc.). These costs reflect an adjustment to VIA's reported costs to exclude depreciation and a portion of overhead expense considered to be over-allocated to transcontinental service (Section 2.1.7 above). Also, because the costing method assumes full variability of costs with output units, it is possible that routes and scenarios which result in service contraction are under-costed while routes and scenarios which expand service may be overcosted. However, if long-run variable cost is considered the relevant criterion, this bias should not be significant.

Equipment requirements are estimated by major link (e.g., Winnipeg-Calgary) using an approximate method based on transit time over the link, and assuming the capacities appearing in Table 6-2. For a 30 per cent decrease in traffic compared to the 1983 "Canadian" loadings, the method predicted about 20 per cent less equipment than is currently-assigned to the service. Improved modelling of equipment cycling would be desirable, but was not possible within the scope of this study. Estimated acquisition prices for new equipment and costs for rebuilt equipment are shown in Table 6-3.

² A peak period comprising only July and August, in contrast to the five-month peak shown elsewhere in this report, was selected to develop more precise estimates of equipment requirements.

TABLE 6-2

EQUIPMENT CAPACITIES

	<u>"Existing Scenario"</u>		<u>"Limited" & "Major Change"</u>	
	<u>Capacity</u>	<u>Weight</u> (tonnes)	<u>Capacity</u>	<u>Weight</u> (tonnes)
Coach	76	59	100	59
Dayniter	52	59	68	59
Sleeper	25	63.5	34	63.5
Coach-Baggage	26*	59	76	59
Service Car	0	137**	0	63.5
Locomotive***	1750 Hp.	116	3000 Hp.	120
Train	18 cars	0	18 cars	-

* Includes seats in Dome car.

** Diner and Skyliner grouped together.

*** Locomotive units assigned at 5 Hp./metric tonne of trailing weight.

TABLE 6-3

EQUIPMENT CAPITAL UNIT COSTS (AVERAGE)

(1983/84 Values)

Rebuilt Single Level Cars	\$ 700,000 (average)
Rebuilt Locomotives	300,000
New Single Level Cars	1,500,000
New bi-level Cars:	
Coach, Dayniter	1,600,000
Sleeper, Service Cars	2,000,000
New Locomotives	2,000,000

Operating costs, equipment capital and total annual costs (including capital recovery) have been estimated for all three scenarios (see Table 6-4). The "Existing" scenario has been shown primarily as a reference point. Equipment rebuild costs are shown but are not added to operating

costs, as savings in operating costs resulting from equipment rebuild would largely offset these capital costs.

TABLE 6-4

SERVICE COSTING RESULTS (MID-1990's)

(millions 1983 \$)

	<u>Operating Cost Per Year</u>	<u>Equipment Capital Requirements</u>	<u>Total Annual Cost</u>
<u>TRANSCONTINENTAL:</u>			
Existing Approach			
A. Canadian	139.2	106.6	139.2
B. Canadian/Super Cont.	253.7	215.6	253.7
Limited Change			
A. Canadian	136.9	308.0	160.4
B. Canadian/Super Cont.	266.0	637.6	314.7
Major Change			
A. Canadian	152.0	337.7	177.8
B. Canadian/Super Cont.	303.8	785.2	363.8
<u>ADDITIONAL TRANSMOUNTAIN:</u>			
Existing Approach			
A. Foothills	78.3	71.7	78.3
B. Foothills/Skeena	92.1	94.1	92.1
Limited Change			
A. Foothills	72.9	204.8	88.5
B. Foothills/Skeena	92.5	257.2	112.2
Major Change			
A. Foothills	95.8	255.2	105.3
B. Foothills/Skeena	106.0	342.4	132.2

6.1.3 Financial Results

Table 6-5 shows estimated loss, revenue/cost ratio and loss per passenger-kilometre expressed in 1983 values.

Although the "Major Change" scenario offers significant improvement in cost recovery to 45-50 per cent, compared to 20-30 per cent for existing services, significant losses remain for all routes and scenarios. Most noticeable is the reduction in loss per passenger kilometre, for the "Limited Change" and "Major Change" scenarios. These results reflect systems that are more effective in reaching a broader market for given resources.

Operation of two transcontinental trains (the "Canadian" and "Super Continental"), with consolidation of trains over Northern Ontario and adjustment of frequency to demand, could provide effective service to a relatively large market. However, capital funding (\$785 million) and operating support requirements (\$189 million per year) would be significant.

In Section 6.1.1, it was noted that traffic on supplementary trans-mountain services, based on historical transcontinental volumes, might not be achieved without significant development of the market for such services. Table 6-6 shows financial results for a more limited Vancouver-Edmonton service, incremental to an existing service (e.g., the "Canadian"). For the "Existing" scenario, the analysis was based on traffic of about 65,000 passengers/year. While financial results are not, in general, as good as for other services, such trains could serve important regional or local objectives.

TABLE 6-5

FINANCIAL RESULTS (MID-1990'S)

	<u>Loss (millions 1983 \$)</u>	<u>Revenue/Cost Ratio</u>	<u>Loss/Pass.-km. (\$)</u>
<u>TRANSCONTINENTAL:</u>			
Existing Approach			
A. Canadian	109.0	.22	.23
B. Canadian/Super Cont.	190.9	.25	.20
Limited Change			
A. Canadian	104.3	.35	.12
B. Canadian/Super Cont.	198.3	.37	.11
Major Change			
A. Canadian	93.8	.47	.07
B. Canadian/Super Cont.	189.4	.48	.07
<u>ADDITIONAL TRANSMOUNTAIN:</u>			
Existing Approach			
A. Foothills	62.3	.20	.25
B. Foothills/Skeena	71.2	.23	.22
Limited Change			
A. Foothills	58.8	.34	.13
B. Foothills/Skeena	72.7	.35	.12
Major Change			
A. Foothills	60.7	.42	.09
B. Foothills/Skeena	73.9	.44	.08

TABLE 6-6

FINANCIAL RESULTS:

VANCOUVER-EDMONTON TRAIN WITH INCREMENTAL TRAFFIC

(millions 1983 \$)

<u>Scenario</u>	<u>Costs</u>	<u>Revenues</u>	<u>Losses</u>	<u>Loss/Pass-km</u>
Existing Approach	18.1	4.0	14.1	\$.23
Limited Change	22.6	5.1	17.5	\$.22
Major Change	27.7	7.7	20.0	\$.16

Financial results shown here for all of the alternatives do not necessarily represent the best that could be achieved, for the following reasons:

- 1) Revenues might be further increased by selectively adjusting prices for accommodation (e.g., sleeping space) and experimenting with different peak/off-peak price differentials.
- 2) Costs might be lowered by use of high-capacity, 44-berth bi-level sleepers.
- 3) The cost base for railway charges might be further lowered from that assumed in the "Major Change" scenario, by more extensive application of Amtrak's "strictly avoidable" costing approach.
- 4) More detailed analysis of costs could identify additional savings. Also, identification of fixed-cost elements (certain overhead costs) would result in lower-cost estimates for alternatives that increase traffic over current levels.
- 5) More detailed service analysis could show opportunities for service adjustments (e.g., off-peak service frequency) that would lower costs while retaining market.

While the effect of improved service designs and estimating procedures, has not been estimated, we consider a target of 70 per cent recovery for western transcontinental services as a reasonable expectation should these additional factors be considered.

6.2 Economic Impacts

This section presents estimates of direct and indirect economic activity that would arise from modernization of western transcontinental services. This activity includes:

- . increased income to the tourism industry, resulting from expenditures by Canadian and foreign travellers attracted to transcontinental trains;
- . increased income to the railway equipment manufacturing industry (mainly in Ontario and Quebec);
- . changes in railway service expenditures;
- . additional, indirect income due to the re-spending of income and expenditures described above.

Other economic benefits are briefly discussed but not evaluated quantitatively. Estimates of annual income gains of the tourist industry, as shown in Table 6-7, are partly based on methodology and estimates developed by Currie, Coopers and Lybrand (1984) for Transport Canada, in turn based largely on Travel Alberta's 1982 Alberta Travel Survey, Statistics Canada data and Tourism Canada's Tourism Impact Model. The method followed was to estimate potential ridership by country of origin and to multiply these estimates by average expenditures per trip, obtaining an estimate of total tourism expenditures. These estimates were then increased, to include the re-spending effect, by the use of national income multipliers developed as part of the Alberta Tourism Impact Model by Tourism Canada.

TABLE 6-7

ESTIMATED ANNUAL ECONOMIC ACTIVITY (MID-1990'S)

	Passengers (000's)	Estimated Direct Travel Expenditures 1983\$Millions	Estimated Travel Expen- ditures incl. re-spending 1983\$Millions	Estimated Total Rlwy Expenditures including re- spending 1983\$Millions
1983 - Actual:	598	236	517	361
<u>TRANSCONTINENTAL:</u>				
Existing Approach				
A. Canadian	385	152	333	306
B. Canadian/ Super Cont.	840	331	727	558
Limited Change				
A. Canadian	715	282	618	353
B. Canadian/ Super Cont.	1,560	615	1,349	692
Major Change				
A. Canadian	1,100	433	952	391
B. Canadian/ Super Cont.	2,400	946	2,076	800
<u>ADDITIONAL TRANSMOUNTAIN*:</u>				
Existing Approach				
A. Foothills	155	61	134	172
B. Foothills/Skeena	216	85	187	203
Limited Change				
A. Foothills	288	113	249	195
B. Foothills/Skeena	406	160	351	247
Major Change				
A. Foothills	444	175	384	232
B. Foothills/Skeena	616	243	533	291

*Amounts are additional to "Transcontinental" activity.

Using Currie, Coopers and Lybrand's procedures, it was estimated that each train traveller spent an average of \$394 for hotel, food, car rental and other expenditures, excluding rail fare. In Table 6-7, the second column ("Estimated Direct Travel Expenditures") shows the effect of applying this estimate to traffic for the "transcontinental" and "transmountain" services described in this study. The third column, which includes the effect of re-spending, was computed using national income multipliers as applied by Currie, Coopers and Lybrand.

Estimates of expenditures on equipment were provided in Table 6-4 of the preceding section. These expenditures represent potential income to the railway equipment industry ranging from \$107 million (rebuilding cars and locomotives for the existing service) to \$785 million (new bi-level equipment for the "Canadian" and "Supercontinental" services under a "Major Change" scenario). These amounts are lump sums and, therefore, cannot be directly compared with estimates of annual travel expenditures shown in Table 6-7.

Total railway operations costs, including capital (see Table 6-4, Section 6.1), provide a measure of direct economic activity due to railway passenger service, and an annual equivalent of equipment expenditures referred to above. In Table 6-7, the final column ("Estimated Total Railway Expenditures") shows the result of multiplying these costs by the same national income multipliers applied to direct travel expenditures. Because railway expenditures might differ in character (e.g., in Canadian content) from tourist industry expenditures, adoption of these multipliers for railway expenditures only approximates the re-spending effect.

Estimates of activity stimulated by expenditures on railway passenger services do not directly measure economic benefits. The reason is that the

activity in the tourist and railway industries has not been compared with that which would be generated in these industries by alternative transportation or non-transportation expenditures. The valuation of stimulated economic activity is considered further in Section 6.3.3.

Western transcontinental rail services could contribute other economic benefits, including:

- . reduced public expenditure for other modes of transport;
- . reduced energy consumption;
- . increased quality of service for rail travellers.

Time did not permit quantitative assessment of these benefits. However, the increased use of transcontinental railway services might reduce traffic on Canadian highways and airways (though for foreign air travellers, the effect would be simply to change the airport of entry/exit to/from Canada). Except in specific congested locations, the effect is likely to be small. Because the density of accommodations on transcontinental trains is low relative to shorter-haul trains, energy efficiency is unlikely to be significantly superior to other modes, though the potential for savings in petroleum fuel under electrified railway operation may be of interest.

For existing rail travellers, modernized service offers a travel product of enhanced economic value. For new travellers, a new product (efficient, comfortable surface transport, and new tour opportunities) is made available, increasing the range of travel choice. To the extent that the value of these increases in consumer satisfaction exceeds increases in fares, modernized service represents an increase in "consumer surplus".

6.3 Financial and Economic Comparisons

This section makes three types of comparisons: comparisons of financial performance between different equipment choices (based on the analysis of the existing service configuration in Section 5); comparisons of financial performance between different management approaches and service configurations (assuming new, bi-level rolling stock and new motive power); and comparisons between these approaches and configurations that recognize broader economic impacts, such as changes in tourism and railway equipment manufacturing activity.

While equipment choice is not strictly separable from service management, these elements are separately analyzed to ensure that benefits from operating efficiencies which might be achieved without new equipment are not attributed to re-equipment decisions. This separation is further justified by the analysis in Section 5, which shows cost savings for bi-level equipment significantly higher than savings for other types of equipment.³

6.3.1 Equipment

Table 6-8 is a summary of financial results presented in Section 5, based on the inventory of rolling stock required for the existing ("Canadian") service. Single-level equipment, whether rebuilt or new, could reduce operating cost; however, these savings are only sufficient to repay the capital costs (including interest) of replacing existing equipment, where a higher density of accommodation is assumed (e.g., a 34-

³The advantage of bi-level equipment was established for the higher volume transcontinental route. For lower volume, regional routes, further analysis of equipment choice may be required.

TABLE 6-8

POTENTIAL COST SAVINGS FROM PASSENGER CAR

REBUILDING OR REPLACEMENT

(millions 1983 \$)

	<u>Capital Required</u>	<u>Annual* Equivalent</u>	<u>Annual Saving</u>	<u>Net Saving</u>	<u>Discounted Payback Period (years)**</u>
Rebuild Existing Fleet	\$122.5	\$13.9	\$12.0	(\$1.9)	15.2
Replace with New Single-Level Cars:					
(a) One-for-one	\$262.5	\$20.1	\$12.0	(\$8.1)	N/A
(b) High density sleepers	\$230.0	\$17.5	\$20.9	\$3.4	17.4
Replace with New Bi-Level Cars:					
(a) 30% capacity increase	\$229.6	\$17.5	\$32.9	\$15.4	8.6
(b) High density sleepers	\$208.0	\$15.9	\$38.5	\$22.6	6.1

* Interest at 6%; amortization 12 years for rebuilt cars, 25 years for new cars; 10% salvage value.

** Years to repay capital including interest at 6% on outstanding, unpaid capital.

berth sleeper). With bi-level cars, operating cost savings would be much higher, sufficient to repay capital costs and to reduce operating deficits, either at the existing density of accommodation or with higher-density (44-berth) sleeping cars.

Capital requirements for bi-level cars are somewhat less than requirements for single-level cars, because the higher prices for bi-level cars are offset by greater capacity. The capital required for rebuilding cars is over half that for new, bi-levels. Therefore, if capital funds available for passenger equipment are limited, a decision to rebuild could significantly delay introduction of new equipment. (It should be noted that these capital estimates do not include funds required for new motive power. These funds are included in estimates appearing in the following Section 6.3.2 (Table 6-9)).

If the federal government were to provide VIA with rebuilt or new equipment free or at a nominal charge (e.g., one dollar per year), operating costs as measured by VIA's accounts would decrease for all equipment options, though most significantly for bi-level cars. This approach might be useful in demonstrating the government's commitment to modernization, in encouraging VIA to pursue service efficiencies, or in allowing for support to other modes. However, in judging different equipment options, it is important that all costs be recognized, whether incurred by the railway operator or by the government.

Table 6-8 shows a payback period for the equipment options. Except where higher-density sleepers are assumed, capital invested in single-level cars would not be paid back within the expected service life of such equipment. For bi-level cars, invested capital would be paid back from operating savings in 6-9 years. Because it would take some 4-6 years to

introduce such equipment, justification of bi-level cars would require a commitment to continued service for 10-15 years.⁴

6.3.2 Management and Operations

Table 6-9 provides a variety of financial measures for the two principal transcontinental route alternatives and for the three scenarios for market development and operating productivity. Bi-level cars and new locomotives have been assumed for the "Limited Change" and "Major Change" scenarios, rebuilt cars and locomotives for the "Existing Approach".

For both routes, the effect of moving from the existing service management approach to the "Limited Change" or "Major Change" scenarios is not so much to reduce absolute losses but to increase significantly the effectiveness of funds expended, as measured by cost per passenger-kilometre and by loss per passenger-kilometre. For example, compared to the existing (1983) service, continued deterioration of traffic for the "Existing Approach" scenario would lead to an increase of 44 per cent in the loss per passenger-kilometre, while a "Major Change" scenario, including traffic increases and cost efficiencies, would reduce loss per passenger kilometre by 57 per cent.

Reductions in unit cost reflect changes both in equipment and in service management. Compared to the existing (1983) service, the "Major Change" scenario reduces cost per passenger-kilometre by 41 per cent. If the existing service were operated as now, with existing traffic but with new bi-level equipment, unit cost would be reduced by only 14 per cent.

The further 27 per cent reduction is due to increases in traffic,

⁴ Because it might be possible to re-sell bi-level equipment during this period for more than the assumed salvage value, investment might still be justifiable for a somewhat lesser commitment over a lesser number of years.

TABLE 6-9

FINANCIAL COMPARISONS

(1983 \$ values)

	Existing Service 1983	Scenarios for Mid-1990'S Operations:		
		<u>"Existing Approach"</u>	<u>"Limited Change"</u>	<u>"Major Change"</u>
		<u>(Rebuilt Equipment)</u>	<u>(Bi-level cars and new locomotives)</u>	
<u>The "Canadian"</u>				
Total Passenger km (millions)	729	469	871	1340
Revenues (millions \$)	46.9	30.2	56.1	84.0
Costs* (millions \$)	164.3	139.2	160.4	177.8
Cost/Pass.-km (cents)	22.5	29.7	18.4	13.3
Losses (millions \$)	117.4	109.0	104.3	93.8
Loss/Pass. -km (cents)	16.1	23.2	12.0	7.0
Revenue/Cost	0.29	0.22	0.35	0.47
Capital Required (millions \$)	---	106.6	308.0	337.7
<u>The "Canadian" and the "Supercontinental"</u>				
Total Passenger km (millions)		974	1808	2782
Revenues (millions \$)		62.8	116.4	174.4
Costs* (millions \$)		253.7	314.7	363.8
Cost/Pass.-km (cents)		26.0	17.4	13.1
Losses (millions \$)		109.9	198.3	189.4
Loss/Pass.-km (cents)		19.6	11.0	6.8
Revenue/Cost		0.25	0.37	0.48
Capital Required (millions \$)		215.6	637.6	785.2

* Including equipment capital, where applicable. For existing (1983) service, costs exclude depreciation and adjust overhead costs as explained in Appendix A ("Costing Method for Service Alternatives").

which result in better utilization of train capacity, and other efficiencies (e.g., more effective deployment of labour). Thus, while new equipment is an important part of service modernization, attention to marketing and management of transcontinental service is essential if significant improvements in financial performance are to be gained.

6.3.3 Economic Impacts

Section 6.2 provides estimates of stimulated economic activity, including direct spending in the tourism and railway industries and indirect re-spending, resulting from various service configurations and management approaches. This section further evaluates these estimates for western transcontinental service modernization scenarios, but excludes discussion of other economic impacts which would be part of a broader cost/benefit appraisal.

In Table 6-10, financial losses on service operations are compared with stimulated economic activity. Financial losses are a relatively small proportion of stimulated activity. The proportion is significantly-lowered by service modernization because losses are not increased while the market served is greater. If further improvements in service cost recovery were achieved, to the 70 per cent target suggested in Section 6.1, losses might be on the order of three per cent of stimulated activity.

Evaluation of these results, which requires comparison with alternative transportation or non-transportation expenditures, was not possible within the time available for this study. Such an evaluation might proceed by direct comparison of a western transcontinental modernization program with selected alternative projects. However, selection of projects for consistent comparison is not obvious and analytical effort could be considerable.

TABLE 6-10

**COMPARISON OF ANNUAL FINANCIAL RESULTS AND STIMULATED
ECONOMIC ACTIVITY**

(Millions 1983 \$)

	Existing Service 1983	<u>Scenarios for Mid-1990's Operations:</u>		
		<u>"Existing Approach"</u>	<u>"Limited Change"</u>	<u>"Major Change"</u>
<u>The "Canadian"</u>				
Financial Loss	117.4	109.0	104.3	93.8
(\$ millions)				
Stimulated Economic Activity*				
(\$ millions)	878	639	971	1,343
Loss as Per Cent of Stimulated Activity	13.4	17.1	10.7	7.0
<u>The "Canadian" and the "Supercontinental"</u>				
Financial Loss	--	190.9	198.3	189.4
(\$ millions)				
Stimulated Economic Activity*				
(\$ millions)	--	1,285	2,041	2,876
Loss as Per Cent of Stimulated Activity	--	14.9	9.7	6.6

* Sum of activity for tourism and railway industries
(columns 3 and 4 in Table 6-7)

Another approach, which is less direct but might avoid inconsistencies, is illustrated in Table 6-11, reproduced from a recent Canadian study of railway electrification. Macroeconomic models, reflecting a variety of assumptions concerning exchange rates, rates of economic growth, Canadian content, the timing of business cycles, etc., are used to estimate incremental gross national product resulting from direct project expenditures. As Table 6-11 shows, the incremental value of projects can be less than direct expenditures (reflecting diversion of resources from more economically-valuable activities) or considerably more than direct expenditures (e.g., where Canadian content is high).

TABLE 6-11

ECONOMIC IMPACT MEASUREMENT
ILLUSTRATION FOR A RAILWAY ELECTRIFICATION PROGRAM
SUMMARY OF CUMULATIVE (1982 - 1994) GNP IMPACTS
(millions 1971 \$)

	<u>Direct Cons- truction</u>	<u>Incre- mental Total GNP</u>	<u>Ratio of GNP Incre- ment to Direct Costs</u>
Fixed Exchange Rate Assumption			
Base Case	1,552	1,704	1.10
High Growth Case	1,958	2,235	1.14
Low Growth Case	1,357	1,259	0.93
No Import Case	1,552	2,065	1.34
Cycle Case	1,845	2,047	1.10
Flexible Exchange Rate Assumption			
Base Case	1,536	1,490	0.97
High Growth Case	1,943	1,950	1.01
Low Growth Case	1,357	1,266	0.93
No Imports Case	1,536	1,723	1.12
Cycle Case	1,870	1,775	0.95

Source:

National Economic Impact of Railway Electrification, Prepared for Transport Canada by Data Resources of Canada, and The Canadian Institute of Guided Ground Transport, June, 1983. Page 5.9.

7. REQUIREMENTS FOR MODERNIZATION

7.1 Strategic Considerations

A strategy is a general program of action with an implied commitment of resources to achieve a basic mission. Tactics, on the other hand, are sets of action plans necessary to implement strategies. Unfortunately, we have found no evidence that VIA at this time has either a strategic plan or a set of related tactics for western transcontinental train services.

This section briefly states what we believe are the important strategic considerations required for modernization. In the following section, we will discuss those tactics that will be necessary to get things done, to transform marketing plans to management actions.

We believe that the most important, fundamental, strategic requirement for western transcontinental train modernization is to ensure that the needs of consumers take precedence in the development of new rail car technology and the purchase of new equipment. This is something that is simply not possible without a clear, explicit strategic plan. As Theodore Levitt in his recent book, The Marketing Imagination, states:

No business can function effectively without a clear view of how to get customers, what its prospective customers want and need, and what options competitors give them, and without explicit strategies and programs focused on what goes on in the market place rather than on what's possible in the factory or what is merely assumed at headquarters. (Levitt, 1983).

And according to Christopher Lovelock in Services Marketing:

Objectives are both performance measures and targets. Without specific, measurable objectives, the organization's mission cannot be translated into action, and it becomes merely a statement of good intentions. Objectives should provide specific directions and guidelines for management. By serving as targets, they indicate what should be accomplished. By serving as performance measures, the objectives allow others both

inside and outside the organization to judge which individuals and components are accomplishing their goals. (Lovelock, 1984).

However, there do not seem to be explicit strategic plans or explicit performance standards by which VIA can be judged. Although VIA does submit a quarterly report to the federal Minister of Transport, the report is said to be in general terms and in any case is not made available to the public. In contrast, Amtrak is required to publish and make publicly-available a semi-annual "Performance Evaluation Report". Moreover, Amtrak's Five-Year Corporate Plan is publicly-available (for an example from that document, see Figure 7-1).

7.2 Tactical Considerations

Modernization of western transcontinental service involves a series of decisions, ranging from more general strategic decisions (e.g., whether the service should be modernized and in what general way) to more specific approvals for action (e.g., approval-in-principle for a modernization plan, and approvals for specific actions and budgetary allocations). Although this report primarily addresses informational needs for general strategic decision-making, with refinements described below, it could contribute to development of a modernization plan as required for approval-in-principle.

Equipment capabilities and requirements are relevant to approval-in-principle insofar as they affect aggregate service costs, revenues and indirect benefits, and as they indicate the prospects for successful implementation. While specification and selection of particular equipment configurations can be advanced to avoid delay in implementation, these activities are related to decisions that follow general approvals.

FIGURE 7-1

EXCERPT FROM AMTRAK'S PERFORMANCE EVALUATION REPORT

Amtrak Route Market Programs—Major Elements Affecting Market Potential

Amtrak Route	Projected Growth 1977-1982	Population Growth	Route Change	Schedule Change	Frequency Change	Connection Improvement	Track Condition Change	Improved Equipment	New Class of Service	New Advertising	Fare Changes	Special Markets Developed
Chicago-Miami	87%	*						X			X	
New York-Miami	76%							X			X	X
Washington-Martinsburg	63%	*				*						
Washington-Montreal	45%							X		X	X	
New York-Montreal	122%							X			X	X
Washington/New York-Chicago	43%		X		X		*	X				
New York/Washington-Kansas City	55%		X	X							X	
New York/Boston-Chicago	38%				X		*	X			X	
Chicago-St. Louis	52%		X	X						X		
Washington-Tristate	71%		X						X	X		
Washington-Newport News	78%	*		X			X			X		X
Chicago-New Orleans	45%				X			X	X	X		X

Source. Five-Year Corporate Plan. Washington, D. C.: National Railroad Passenger Corp., 1977.

Notes: X= Amtrak action to improve route.

* = External change helping route.

We have not considered in any depth requirements for transition to modernized service, including interim services and organizational requirements. Our comments below are offered as starting points for action, not as a definitive analysis.

7.2.1 Analysis and Evaluation for General Approvals

Revenue and Cost Forecasting -

Several factors affect financial performance of transcontinental services -- routes, schedules, equipment capacity, manning, etc. Development of more detailed service specifications will provide further opportunities to match service to demand, thereby controlling costs and maximizing revenues. The impact of different pricing strategies on demand and revenue has not been examined.

Equipment capacity has been defined for comparability with existing services, but designs offering higher-density accommodations might increase capacity of new cars without seriously degrading customer satisfaction (e.g., the Superliner sleeping car provides 44 berths, compared to 34 as used in this study).

More detailed analysis of operational requirements (on-board manning, administrative support, etc.) could identify further efficiencies. Also, identification of "fixed" cost elements (e.g., railway and VIA overheads) would permit more accurate cost forecasting for the significant changes in service activity represented here.

Cost/Benefit Appraisal -

Although several indirect benefits are identified in this report, a thorough cost-benefit appraisal could not be undertaken. Several benefits

(and, undoubtedly, costs) have not been measured. Also, indirect benefits are often measured in absolute terms (e.g., the total value of equipment orders placed in Canada), rather than in relative terms (compared to investment of such capital in other activities).

Finally, customer benefits have not been measured, beyond those represented by passenger revenues. Thus, for example, existing passengers (or, more accurately, future passengers who would use existing services) would benefit from service improvements. These extra benefits are only measured by revenue, if fares are assumed to rise as improvements in service are achieved.

While considerable analytical effort is required to define specific and practical service configurations and to gain government approvals, much of this effort involves synthesis, (i.e., updating and extension of existing information), rather than entirely new work. Moreover, there is the ever-present risk of "paralysis by analysis". The need, at this time, is for information sufficient to gain approval for a general strategy (e.g., single spine, re-equipped with bi-level equipment by the latter part of this decade). In this context, clarification of governmental objectives, and development of a service organization committed to implementation of new ideas, are at least as important as more detailed analyses of services.

7.2.2 Technological Development

Equipment has been examined in this report in relatively general terms, sufficient for discussion of broad service alternatives. While the choice of design and manufacturer is somewhat limited (e.g., the Superliner or UTDC/Can Car bi-level), and may be dictated as much by industrial

strategy considerations as by technical merit, some further design and testing is required to ensure acceptable vehicle performance and to configure interior accommodations to the market of the 1990's. New equipment may require adjustment to existing or planned maintenance and servicing facilities.

Since bi-level cars and associated motive power are now in operation in the U.S., including northerly routes, and have been accepted by the travelling public, assessment and equipment development should be seen primarily as adaptation. Excessively long-term development will result in loss of opportunities for service improvement and cost control, and in foregone deficit reductions and external benefits.

7.2.3 Market Research

As we have stated before, the needs of the consumer must take precedence in the development and/or purchase of new rail passenger car equipment. Equipment manufacturers must know the size and characteristics of the passenger market to be served before they can effectively finalize the design and engineering of new equipment. If equipment is bought "off the shelf", how does one effectively finalize specifications without a knowledge of whose needs are to be satisfied? In short, market research needs to be done in conjunction with the specification of equipment.

7.2.4 Interim Services

Service alternatives involving substantial modernization of operations and replacement of equipment will require 4-6 years for full implementation. During the interim period, services might be continued as they now are, but with some improvements designed to maximize customer satisfaction

for a given dollar of expenditure. Significant expansion of service during this interim period would likely strain the capabilities of the existing equipment and diminish general (i.e., taxpayer) support for capital improvement programs because short-term losses would be increased. While limited equipment rebuilding might be undertaken to maintain service standards, general rebuilding would likely be associated with a decision to delay equipment replacement and would absorb funds which could be applied to new equipment.

A transitional strategy for western transcontinental service might involve gradual introduction of new equipment (e.g., bi-level coaches first; sleeping and service cars later). However, this type of phased introduction (versus introduction of entire trainsets) would require conversion to HEP and refurbishing of some existing sleeping and meal service cars. Also, those cars which are now of primary marketing importance (i.e., new sleeping cars) would be the last to come on stream.

For the "Major Change" scenario, the transitional period affords an opportunity to implement changes not closely related to equipment acquisition: railway contracts can be re-negotiated; new staffing arrangements and operating procedures can be developed, negotiated and at least partially-implemented; and finally, organizational improvements can be made to increase customer awareness of the product and to control overhead costs.

7.2.5 Organization for Change

Many challenges face VIA in the coming years -- improvement of service performance, gaining control of costs and making greater progress in system modernization. Despite concerns raised throughout this report about VIA's

performance, VIA, like Amtrak, is an evolving organization and may yet successfully meet these challenges. However, for western transcontinental services, it is not clear that VIA can achieve improvements quickly enough, or that VIA is sufficiently committed to an effective service delivery system to justify the required capital and operating support.

For the "Limited Change" scenario described in this report, VIA is the obvious and practical choice for service operator. However, where the "Major Change" approach is contemplated, alternative organizational approaches should be considered. The following observations on major organizational alternatives are intended as starting points for such discussion.

1. Existing VIA Rail Organization

By using the existing VIA rail organization, there would be no need to set up a new organization and existing procedures and contracting formulas could be used as a starting point. VIA employment would not be reduced (at least, in comparison with other alternatives) and the image of one national rail carrier would be retained. However, changes required to implement service alternatives would likely be incremental and certain changes (labour productivity improvements, reform of operating agreements) might only amount to minor adjustments. It is not certain that VIA is fully-committed to western transcontinental services and would aggressively market such services. Moreover, with new equipment and facilities in place, the incentive for VIA to pursue operational efficiencies may decrease, since it would be politically-difficult for the government to withdraw from financial support at that time.

2. Direct Federal Contracts with CN and CP

Duplication of overhead would be reduced and direct review of railway operating performance would be facilitated by this approach. However, there are several disadvantages. The public image of passenger train services could be harmed by a return to historic arrangements. CN and CP are freight railways and are no longer in a position to define and service the passenger market.⁵ Government would have to undertake detailed planning responsibilities which would not only increase government staff costs, but, more important, would tend to divert attention from overall strategic planning and policy development.

If VIA were terminated, railway service responsibilities might revert to payments to CN and CP for 80 per cent of losses. Under such circumstances, it is unlikely that CN and CP would cooperate in implementing modernized transcontinental services. Thus, termination of VIA implies either termination of service or development of a commercially-oriented contracting procedure with the railways.

3. Transfer Service to an Existing, but Non-Railway Organization

This alternative offers several advantages. A service company could be sought which already had a strong customer-orientation in its marketing approach to service delivery systems. Similarly, management with proven effectiveness might be more successful in modernizing staffing, introducing innovation, and negotiating commercial contracts with the railways. It is also likely that such an organization would have greater presence in

⁵ CN actively promoted passenger service in the 1960's with considerable success. However, the organization behind this effort is no longer in place within CN.

Western Canada and perhaps would be more in tune with western needs. Depending on the organization (e.g., a hotelier or airline), opportunities might arise for more effective relations with other travel industry organizations.

One way in which such an alternative might be implemented would be to tender for service. The required service and related standards would be specified and an annual grant offered to provide an attractive return based on expected costs and revenues. It would be the responsibility of tendering companies to negotiate contracts with CN and CP in such a way as to protect the government's interest in service standards, and to acquire financing for capital funding. The government's grant would have to reflect adequately the risks involved in undertaking such service; otherwise, it is unlikely that financially and managerially-capable firms would be attracted. Under the right circumstances, it is possible that CN and CP might participate in a consortium with service-oriented organizations to bid on such service. Such an arrangement would minimize contracting problems and bring railway operating expertise to such a venture.

The advantages of this approach would have to be balanced against political considerations which might favour retention of a single, national railway passenger carrier, and against the risk of subsequent business failure (although this risk might be more bearable than the risk of escalating VIA deficits).

4. Incorporate a New Entity for Western Transcontinental Service

This alternative has the advantage over Alternative 3, in that a new organization could be designed from scratch to match the requirements

for western transcontinental service. Also the uncertainty attached to the tender process could be avoided. However, this alternative poses certain difficulties. Government would be involved in developing an operational railway organization, a task for which it is ill-suited, and such an organization would in many respects be subject to the same political influences that now limit VIA's effectiveness. These difficulties might be avoided if private sector investors and managers were to take the initiative in developing the new corporation.

Another major concern is access to running rights. Unlike Alternative 3, commitments to a new organization would effectively have to be in place before agreements were made with CN and CP, thus compromising the ability to negotiate fair contracts because of the railways' monopoly over required trackage. The CTC could order running rights, but such action could not be planned and would replace a commercial contract with an essentially-political adjudication.

In conclusion, these alternatives address the need for an organization to undertake modernized service. In the meantime, a plan is required for management of existing services in such a way that losses are minimized and the chances for success of the modernized services are not prejudiced. We did not have a mandate to prepare such a plan, but it should be noted that if VIA were not to be the ultimate operator, it is likely that VIA would still have to operate existing services, under direction of government and/or the new operator.

7.3 Illustrative Strategy

Finally, in Figure 7-2, we present an illustration of the kinds of elements that should be included in any strategic plan to modernize western transcontinental railway passenger service.

FIGURE 7-2

AN ILLUSTRATIVE STRATEGY FOR MODERNIZATION

1. Markets to be Served

- (a) Primary target market segments are: domestic long-haul travellers (with various trip purposes, but with a strong tourism focus on seeing our own country at ground level, fostering national unity); and foreign tourists (especially from the United States, United Kingdom, West Germany and Japan).
- (b) Secondary markets: domestic, intra-regional traffic for purely-transportation purposes of intermediate (not short) trip lengths (e.g., Winnipeg-Calgary; to be accommodated as capacity is available).

2. Service Configuration

- (a) Single-spine route, with 70-75 hour schedule reducing to approximately 65 hours by 1993, and frequency matched to seasonal demand.
- (b) New bi-level equipment, phased in over 4-6 years.
- (c) New service and equipment to be introduced under revised labour agreements incorporating work procedures comparable to other service sector operations.
- (d) Meal service to be provided by a private service operator or caterer with well-defined service standards.
- (e) Fares to be adjusted to maximize overall cost recovery, reflecting adjustments for seasonal demand and better capacity management.

3. Organization

- (a) Operation and management to be provided by VIA or by the private sector, with government funding on a fixed schedule (e.g., over

five years) based on historical subsidy experience adjusted for efficient operation and including penalties and incentives related to performance. Private sector company or consortium to negotiate contracts with CN and CP as required. A consortium including a service sector company, CP and CN, is one possibility.

- (b) Strengthening of regulatory provisions to offset the monopoly position of CP/CN in negotiations with the service operator. A finding of unreasonable charges or contract restrictions to invoke financial penalties sufficient to make abuse of monopoly power unattractive and to avoid necessity for frequent regulatory intervention.

4. Interim Services

- (a) To be operated by VIA under a transitional plan agreeable to the service operator and the government.
- (b) Operational efficiencies to be introduced as practical during transitional period.
- (c) Funding to VIA to be linked to interim service performance objectives.

8. CONCLUSIONS

Existing Services

- (1) The prospects for the existing approach to western transcontinental services are poor. Costs are rising rapidly and, despite service cuts, losses remain at high levels. We doubt the Canadian public's willingness to continue to subsidize indefinitely over two-thirds of such costs, or in other words, to permit non-commercial objectives to be the dominant justification for taxpayer support. With loss of capacity and deteriorating equipment, we see a declining role for these services both in pure transportation and tourism. This outcome is in contrast to Amtrak's success in introducing and marketing bi-level trains in the western United States.
- (2) Equipment is outdated and prone to failure, resulting in poor service performance and high operating and maintenance costs.
- (3) There is no evidence of a clear, longer-term, marketing strategy for western transcontinental service, reflecting customer requirements and opportunities for cost reduction. Existing services are being operated primarily as a social obligation and only secondarily as a business, with service standards at only the minimum necessary for public acceptance.

Marketing Opportunities

- (4) While we expect a deterioration in traffic without modernization of service, there is an important existing market for transcontinental service. This market includes both the pure transportation and the tourism components, although the tourism

value of the train is likely of primary significance. The existing market includes both price-sensitive and service-quality-sensitive travellers.

- (5) With modernized equipment, improved service and adequate capacity, a significant increase in traffic -- potentially a doubling of traffic by the mid-1990's -- is possible with the "Canadian". (Should the "Super Continental" be reinstated and properly modernized, it could attract roughly the same number of passengers as a modernized "Canadian".)
- (6) Good quality sleeping and meal car service and through-train or through-car service on the major western transcontinental routes are essential to develop potential domestic and international markets.
- (7) The markets that we judge to have the highest potential are the domestic Canadian market, plus the United States in the short run, and Japan in the long run. However, airline and other tourism marketers could include rail in their package tours and other promotional efforts only in conjunction with an efficient, reliable, attractive and well-positioned rail service.

Financial and Economic Impacts of Modernisation

- (8) With the new bi-level equipment and the service marketing and managerial improvements outlined in this report, cost recovery could approach 50 per cent, compared to the 24 per cent achieved by existing (1983) services. At this level, cost per passenger kilometre is reduced by 41 per cent compared to existing services. One-third of this decrease is due to new equipment, while the

other two-thirds is due to increases in market (resulting in greater utilization of train capacity) and to cost efficiencies (e.g., improved deployment of labour). Modernization with bi-level equipment is substantially superior to approaches which feature the re-building of existing cars and locomotives or the acquisition of new, single-level rolling stock.

- (9) With further efforts to adjust pricing and service configuration, to identify further efficiencies, and to further revise the basis for service contracting, cost recovery of 70 per cent is a reasonable target.
- (10) Subsidies for western transcontinental services will not be eliminated by modernization but a much larger market would be reached. With bi-level cars, operating cost savings -- which would be higher than with single-level cars -- are sufficient to repay capital costs and to reduce operating costs.
- (11) Significant economic activity would be stimulated by modernized service. Such activity would include tourism income generated in Canada, opportunities for domestic equipment manufacturing, and railway service activity. Railway service losses are a relatively-low proportion of such activity and, for the major modernization program, might be as low as three per cent of stimulated economic activity.

Requirements for Modernization

(a) Service Specification -

- (12) Faster schedules would improve the marketability of the service, reduce capital requirements for new equipment, and reduce operating costs.

- (13) The level of service offerings, such as tourist and first-class sleeping accommodations and meal service, must be tailored to the specific requirements of target market segments.

(b) Equipment -

- (14) Bi-level equipment of the Amtrak Superliner or UTDC/Can Car type offers the greatest potential for cost reduction and revenue enhancement.
- (15) New bi-level equipment could be introduced in 4-6 years, allowing 1-2 years for specification and adaptation of existing designs (including market research required to specify interiors), and 3-4 years for manufacture. A limited program involving the modification of existing bi-level designs appears to be economically more efficient than a lengthy, prototype development program. Adaptation is preferred because longer-term prototype development would delay service improvement and cost control measures.

(c) Transition -

- (16) Delaying implementation from 4-6 years to 10-15 years could result in a loss of equipment-related cost savings of \$100-200 million, depending upon the delay and the bi-level equipment option chosen.
- (17) General rebuilding of existing transcontinental equipment could delay implementation of a modernized service and absorb capital funds which could be applied to new equipment.

- (18) Significant expansion of service in the short term would strain existing equipment capacity and increase losses, and, through poor service quality, could weaken the market for future modernized services.
- (19) Effective implementation depends on revision of contracting procedures, labour agreements and organizational arrangements before or as new equipment is introduced.

(d) Organization and Management -

- (20) For changes limited by existing institutional arrangements, VIA is a practical choice as a service operator. More significant changes envisaged in this report might require different organizational arrangements which stress sensitivity to the specific needs of western transcontinental service.
- (21) Improved market and financial performance depends on new, commercially-oriented contracts with the railways, including a realistic cost base together with substantial penalties and incentives to ensure the required schedule performance. One approach involves the payment of strictly-avoidable costs to the operating railways (similar to the Amtrak model), coupled with substantial incentive payments earnable for good performance.
- (22) Successful modernization will require much greater integration of all aspects of service delivery and increased commitment and interest on the part of the government and the service operator.

APPENDICES

- A. COSTING METHOD FOR SERVICE ALTERNATIVES**
- B. 1983 WESTERN TRANSCONTINENTAL TRAFFIC CHARTS**
- C. LIST OF INDIVIDUALS CONTACTED**
- D. DETAILED EQUIPMENT LAYOUTS**
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APPENDIX A

COSTING METHOD FOR SERVICE ALTERNATIVES

INTRODUCTION

The purpose of this appendix is to outline an approximate method for costing transcontinental passenger train services, allowing for variations in equipment, labour requirements and system configuration (routes, frequencies, etc.).

Costs are based on 1983 information provided by VIA Rail, on 1981 railway data published by Statistics Canada and on CTC (Canadian Transport Commission) data for 1981 VIA costs and railway charges. 1981 costs were increased by 17.3 per cent (based on changes in the GNE implicit price index) to represent 1983 costs. To ensure completeness, the method has been used to estimate 1983 costs. VIA has estimated these costs at \$199.3 million, including \$46.5 million for railway service and maintenance of VIA equipment, \$58.9 million for other railway charges, and \$93.9 million for VIA's internal costs. Of the latter figure, \$23.3 million were for on-board services directly attributed to transcontinental service, the remainder being expenses accounted for at the VIA system level and allocated to services according to each service's proportion of total car kilometres.

1. RAILWAY CHARGES

1.1 Road Maintenance

CTC¹ has estimated VIA track maintenance costs at \$0.29/car mile, equivalent (at 59 tonne per car) to \$3.05/000 gross tonne-kilometre (GTK).

¹ Canadian Transport Commission, A Comparison of Amtrak and VIA Costing Approaches, April 29, 1983.

If costs are allocated to cars and locomotives, this figure is re-expressed as \$2.20/000 GTK. This latter figure is relatively close to a value of \$2.05/000 GTK, derived by summing 1981 Statistics Canada road maintenance expenses for CN and CP, adjusting for general and administrative overheads, and comparing with total GTK (including locomotives).

The CTC estimate is equivalent to \$2.58/000 GTK in 1983. For transcontinental service, with GTK estimated at 3,674 million, track costs are \$9.5 million.

1.2 Equipment Maintenance

In 1983, transcontinental equipment expenses amounted to \$46.488 million for both passenger cars and locomotives.

In 1975, passenger locomotive maintenance costs were on the order of \$0.70/mile (including some, but possibly not all, relevant overheads)² equivalent to about \$1.40/mile, or \$0/.87/km, in 1983. If this figure is used to subtract locomotive maintenance from 1983 total maintenance, car maintenance is estimated to be \$1.44/car mile, or \$0.89/car km. These costs do not include refurbishments charged to VIA's capital accounts.

Transcontinental car maintenance costs are higher than passenger system averages, presumably because of the high proportion of sleeping and dining cars, and the somewhat greater difficulty of carrying out repairs away from major repair shops.

²R. F. Stapells & Associates Ltd., Transcontinental Passenger Service Maintenance Study, prepared for Transport Canada, September 1976.

New Equipment The principal equipment options are: new locomotives (most likely 3000 Hp units, but possibly rebuilt passenger units), new bi-level cars, new single level cars, and rebuilt (HEP) single level cars.

Information from Amtrak indicates that running repairs per car km are similar for rebuilt single level and bi-level cars. (Including heavy repairs, rebuilt cars were more expensive in 1983, but these data may not reflect longer run costs.) Superliner maintenance costs were in the neighbourhood of US \$0.23/car km. Amtrak's locomotive unit maintenance costs were US \$0.74/unit km in 1983. It is likely that these figures do not include general overheads. Canadian passenger car maintenance costs, excluding overheads and expressed in 1983 values, rose from \$0.20/car km in 1957 to \$0.52/car km in 1981. The comparability of the former figure with Amtrak's Superliner costs suggests that costs for new equipment in Canada would follow a pattern similar to that experienced here between 1957 and 1981. To simplify calculation an average of the 1957 and 1981 costs -- \$0.36/car km -- has been adopted for both single and bi-level cars. Allowing 35 per cent for railway overheads (shops, labour fringes and general corporate overhead), this cost rises to \$0.49/car km. To further allow for a greater proportion of 'higher-maintenance' cars in long distance service this cost has been increased by 25 per cent to \$0.61/car km. At this level, new cars (single or bi-level) offer roughly 30 per cent savings over existing steam-heated equipment, consistent with Amtrak comments concerning savings gained by conversion of single level equipment to head-end electric power.

Based on Statistics Canada data for 1981, expressed in 1983 values, Canadian locomotive maintenance costs, including a 35 per cent allowance

for overheads, were about \$1.30/unit-km.³ This figure is comparable to Amtrak locomotive maintenance costs, when converted to Canadian funds and adjusted at Canadian railway overhead rates.

The impact on maintenance costs of new facilities now under construction by VIA has not been considered.

1.3 Traffic

These costs are assumed to be primarily related to soliciting and managing freight traffic and have not been estimated.

1.4 Train Crews

CN and CP crewing are similar -- a 5-man crew (2 enginemen, conductor, trainman, baggageman) with an additional crew man for longer trains (a flagman for more than 7 cars or, for CP, an assistant conductor "when the need arises").

A typical transcontinental crew run is about 150 miles (240 km). At an average speed of 60.5 km/hr (excluding station dwell at Toronto, Sudbury, Winnipeg and Calgary), a crew run would be covered in 4.0 hours. An allowance of 1.0 hours has been made, per crew run, for terminal time.

Assuming that transcontinental trains generally exceed 7 cars, the cost to VIA of crew wages per run is estimated as follows:

³ These costs reflect a mix of lower and higher horsepower units.

	<u>CP Crews</u>	<u>CN Crews</u>
2 Engine Crew	\$ 200.70	\$ 233.78
2 Conductors	\$ 169.03	\$ 193.08
2 Trainmen/Baggageman	\$ 150.03	\$ 154.02
10% allowance for unpaid time (vacation, guarantees, etc.)	\$ 51.98	\$ 58.09
Pensions, UIC	\$ 90.91	\$ 76.04
Corporate Overhead	\$ 35.12	\$ 53.63
Total, per run	\$ 697.77	\$ 768.63

The above costs are computed under the following procedures and assumptions:

- (1) Average hourly rates for 1981 from Statistics Canada (catalog 52-212), increased by 17.3 per cent, based on GNE implicit price index increases from 1981 to 1983.
- (2) Pension and UIC expenditures compared to total labour compensation (Statistics Canada 52-208 and 52-212), to estimate a markup for direct labour of 15.9 per cent for CP and 11.9 per cent for CN.
- (3) No data readily available for train crew unpaid time. (For on-board crews, unpaid time is about 14-15 per cent of total costs.)

Costs for passenger crews are higher than for freight crews. If hourly rates of pay applicable to freight crews were applied in passenger operations, CP costs per train run would fall to a \$669 while CN costs would fall to \$656. Passenger trains may involve greater responsibilities on the part of train crews, because safety of passengers is a higher priority than security of freight, and because passenger comfort may require more experienced crews. However, it is generally understood that passenger runs are preferred and seniority often dictates assignments. To

the extent that passenger service is a reward for years of service on freights, costing for commercial contracts (but not current VIA contracts) which allow for a profit margin would recognize this reward as a system overhead. In a "commercial operator" service, this adjustment might be made by averaging freight crew and passenger rates.

It is also likely that a commercial operator would expect rationalization of passenger crew sizes, if not in fact then in developing the cost base for contracting purposes. Freights can now be run with as few as 3 crew. If passenger crews were reduced to three (on-board staff taking over ticketing and baggage handling), costs would be reduced as follows (including passenger/freight averaging):

	<u>CP Crews</u>	<u>CN Crews</u>
Engineman	\$ 96.59	\$ 104.37
Conductor	\$ 83.26	\$ 89.15
Trainman	\$ 74.72	\$ 75.60
10% unpaid time	\$ 25.46	\$ 26.91
Pensions, UIC	\$ 44.53	\$ 35.23
Corporate overhead	\$ 17.20	\$ 24.84
Total Per Run	\$ 341.76	\$ 356.10

For VIA's 1983 transcontinental operations, train crew wages, estimated according to existing labour practices, are:

$$\text{Train Runs} = \frac{2,211,541 \text{ train miles}}{150 \text{ miles}} = 14,744$$

$$\text{Train crew cost (CP Crews)} = 14,744 \times \$697.77 = \$10.3 \text{ million}$$

1.5 Fuel

Fuel consumption is affected by several factors including train weight, speed and power-to-weight ratio. In 1981, passenger train fuel consumption was 1.00 litres per car kilometre.⁴ At an average (1980) car weight of 65 tons (59 tonnes), fuel consumption was 16.9 litres per thousand gross tonne-kilometres. This compares with fuel consumption of 4.47 litres per thousand freight gross tonne-kilometres. CTC data for 1974 transcontinental service costs by car type⁵ were converted to fuel use estimates using a 1974 diesel fuel price of 6.3 cents/litre and approximate car weights, with the following results:

		<u>Assumed Weight</u> (tonnes)	<u>Litres/000 Gross</u> (tonne-km)
CN	Coach	59.0	14.5
	Sleeper	63.5	14.1
CP	Coach	59.0	19.1
	Sleeper	63.5	20.5
	Diner	63.5	20.2

These figures are roughly comparable with the 1981 system average. CN trains were generally longer than CP trains, resulting in unit fuel economies (train fuel use per car falls with increasing train length) and CP generally provides more power than CN to ensure reliable timekeeping should a motive power failure occur.

⁴ Statistics Canada, Equipment, Track and Fuel Statistics, catalog 52-209 and Operating and Traffic Statistics, catalog 52-210.

⁵ Canadian Transport Commission, Transcontinental Rail Passenger Services: An Information Report, Working Paper, June 1976.

Since consolidated services are more like older CN services in consist makeup, an average of the above CN fuel use rates, 14.3 litres/1000 gross tonne-kilometres, has been adopted.

The above estimate assumes allocation of all fuel use to cars. However, locomotives contribute significant gross tonne-kilometres. Assignment of one 116 tonne locomotive per five 59-tonne cars results in 28 per cent of gross tonnes being contributed by locomotives. If fuel is allocated to all gross tonnes, consumption can be re-expressed as 10.3 litres/1000 gross tonne-kilometres.

1983 transcontinental service gross tonne-kilometres have been estimated as 3674 million, including motive power. At 28.6 cents/litre,⁶ 1983 fuel cost is estimated at \$10.5 million. Including general corporate overhead (CP), this cost rises to \$11.1 million.

1.6 Other Transportation Expenses

These expenses comprise yard operation, train operation expenses (other than crew and fuel), stations and other related expenses. 1981 expenses for CN and CP were adjusted for labour fringes and general corporate overheads, inflated to 1983 values and allocated to train kilometres. The results are:

<u>CN</u>	<u>CP</u>
\$10.28/train km	\$8.15/train km

⁶ 1981 cost of fuel and provincial taxes for all railways, was assumed representative of 1983 prices, given stabilization of international oil prices.

Applying the CP value to transcontinental train-km (3.56 million) produces a cost allocation of \$29.0 million.

2. VIA EXPENSES

2.1 On-Board Services

VIA Rail supplied detailed information about on-board crewing of transcontinental trains and related wage rates. Using this information and assuming 15 per cent unpaid time, 15 per cent labour overhead and meal service material costs of 50 per cent of meal revenues, OBS expenses for 1983 were estimated at \$14.2 million. These costs do not include such items as linen, crew lodging, commissary or departmental overhead. VIA's actual expenses including these items, but not corporate overhead, were \$23.3 million in 1983.

Costs, expressed per car mile, adjusted to include all OBS items and somewhat simplified in form, are shown on Table A-1.

VIA has indicated that with new rules with regard to employee guarantees, maximum rest time deductible from service hours paid, etc., OBS labour costs would be reduced by about 12.5 per cent.

Under a more extensive revision of crew rules, it should be possible to reduce sleeping car porters by half (one porter per two cars, duties mostly equivalent to hotel maid service). Meal service might be offered to private restaurateurs, with the equipment provided and meal service standards controlled by the service operator.

TABLE A-1

COSTS OF ON-BOARD SERVICES, TRANSCONTINENTAL TRAINS (VIA)-1983

Off-Peak

Sleeping Cars	\$ 0.337/car km	
Dining Cars	\$ 1.548/car km	(5-man crews)
plus	\$ 0.646	(materials)
Skyline Cars	\$ 0.405/car km	(1-man crew)
plus	\$ 0.646	(materials)
Dayniter Cars (incl. Coach Cafe)	\$ 0.308/car km	
Service Staff	\$ 0.906/train km	

Peak

Dining Cars	\$ 2.017/train km	(6-man crew)
plus	\$ 0.646	(materials)
Skyline Cars	\$ 1.712/train km	(5-man crew, Winnipeg-Vancouver)
plus	\$ 0.646	(materials)

2.2 Equipment Depreciation, Amortization and Retirements

In 1983 these (accounting) costs amounted to \$32.9 million for the VIA system. VIA allocates these costs to car miles, with the result that transcontinental service attracts approximately \$12.2 million⁷. These

⁷ Via acquired CN and CP's rolling stock at an average cost of \$51,800 (\$65.5 million for 1265 units, Science Council of Canada, Report 34, Transportation in a Resource Conscious Future: Intercity Passenger Travel in Canada, Sept. 1982). For a transcontinental fleet on the order of 200 units, and assuming depreciation over 10 years, annual accounting charges would be \$1.0 million.

costs include allocations for both old and new (e.g., LRC) equipment. From an economic viewpoint the transcontinental fleet is largely obsolete, and has little, if any alternate-use value. Therefore, depreciation charges have been omitted.

2.3 Other VIA Expenses

These expenses, amounting to \$58.4 million, include stations, marketing, general administrative and other corporate expenses allocated to transcontinental service according to its share of total system car-kilometres. Since transcontinental trips are typically much longer than trips elsewhere in VIA's system (1218 km versus 289 km) it is likely that a car-kilometre allocation overstates costs induced by transcontinental service. Moreover, much of VIA's recent efforts at the corporate level have been directed to corridor services between Quebec City and Windsor.

As an alternative, these expenses might be allocated half by car-kilometres (\$0.68/car km), half to passenger trips (\$11.65 per passenger). This approach would allocate \$36.2 million to western transcontinental service. Since some of these expenses are likely fixed with respect to traffic. This estimation approach will probably overstate savings for options which reduce service and overstate costs for options which expand service.

3. SUMMARY

Table A-2 summarizes cost estimates for 1983 transcontinental service and compares these estimates with cost totals and subtotals provided by VIA Rail. Estimates of railway charges do not include cost of capital,

TABLE A-2

WESTERN TRANSCONTINENTAL EXPENSES - 1983

(millions \$)

	<u>Estimated</u>	<u>'Actual'</u>
<u>Railway Charges</u>		
Road Maintenance	9.5	-
Equipment Maintenance	46.5**	46.5
Train Crew	10.3	-
Fuel	11.1	-
Other Transportation	29.0	-
Incentives	<u>2.8**</u>	<u>2.8</u>
TOTAL	109.2	105.4*
<u>VIA Expenses</u>		
On-Board Services	23.3**	23.3
Depreciation, etc.	0.0	12.2
General, Admin., Other	<u>36.2</u>	<u>58.4</u>
TOTAL	59.5	93.9
<u>TOTAL COSTS</u>	<u>168.7</u>	<u>199.3</u>

* Detail not obtained for some categories but total is 105.4 million.

** Not estimated (actuals substituted).

although this should be a relatively small item (VIA now owns its own equipment). Any over-estimation may be due to use of an allocation method, compared to the railway's avoidable cost method, and/or to insufficient specificity (e.g.: for other transportation expenses).

Table A-3 provides estimated unit costs for three operations 'scenarios'. Equipment maintenance is calculated in all scenarios as if performed by the railways. The impact of VIA's maintenance facility program is not known, though one would expect that savings in maintenance would be offset to some extent by the capital costs of new facilities. The "Limited Change" scenario includes reductions in OBS costs and maintenance savings due to new equipment. The "Major Change" scenario shows lower railway train crew costs and significantly lower OBS costs. The effects of faster schedules on OBS costs have been reflected through a reduction of 10 and 20 per cent for both the "Limited" and "Major Change" scenarios (10 and 20 hours time savings for Montreal/Toronto to Vancouver). Under the "Major Change" scenario, a different basis for railway contracting would see less reliance on system allocations to define the cost base and more reliance on performance incentives. The net result would be higher payments per train/km in return for faster schedules and on-time reliability.

Table A-4 presents unit costs from Table A-3 in the form in which they were applied for costing our service alternatives.

TABLE A-3

WESTERN TRANSCONTINENTAL SERVICE COSTING

(1983 Values)

		<u>"Existing"</u>	<u>New Equipment "Minor Change"</u>	<u>New Equipment "Major Change"</u>
<u>Railway Charges</u>				
Road/Mtnce. & Fuel		5.53/000 GTK	5.53/000 GTK	5.53/000 GTK
Car Mtnce.		0.89/car km	0.61/car km	0.61/car km
Loco. Mtnce.		0.87/unit km	1.30/unit km**	1.30/unit km**
Train Crews	CN	2.91/train km	2.91/train km	1.42/train km
	CP	3.20/train km	3.20/train km	1.48/train km
Other	CN	8.15/train km	8.15/train km	8.15/train km
	CP	10.28/train km	10.28/train km	10.28/train km
<u>Service Operator</u>				
<u>On-Board Service</u>				
Sleeper		0.34/car km	0.29/car km	0.15/car km
Diner		2.19/car km	2.00/car km	PR*
Skyline		1.05/car km	1.00/car km	PR
Day/Coach Cafe		0.31/car km	0.27/car km	Incl. in train staff
<u>Train Service Staff</u>				
Off Peak		0.91/train km	0.79/train km	0.79/train km
Peak		2.68/train km	2.35/train km	1.33/train km
<u>Equipment Capital</u>		<u>Specific Estimate</u>		
<u>Other Costs</u>		11.65/passenger 0.68/car km	11.65/passenger 0.68/car km	11.65 passenger 0.68/car km

* PR = Private Restaurateur.

**The new locomotive would be 3,000 Hp., compared with 1,750 Hp. for existing units.

TABLE A-4

SERVICE COSTING METHOD - RESTATED UNITS

(1983 Values)

Units	Unit Costs \$		
	"Existing"	"Limited Change"	"Major Change"
Coach-km	1.57	1.29	1.29
Dayniter-km	1.88	1.53	1.29
Sleeper-km	1.91	1.55	1.41
Coach/Bagg-km	1.57	1.29	1.29
Service Car-km	6.38*	4.11**	1.29
Loco-km	0.87	1.30	1.30
CP Trains			
off-peak-km	12.75	12.55	12.93
peak-km	14.52	13.95	13.36
CN Trains			
off-peak-km	15.17	14.97	14.69
peak-km	16.94	16.37	15.12
000 GTK	5.53	5.53	5.53
Passengers	11.65	11.65	11.65

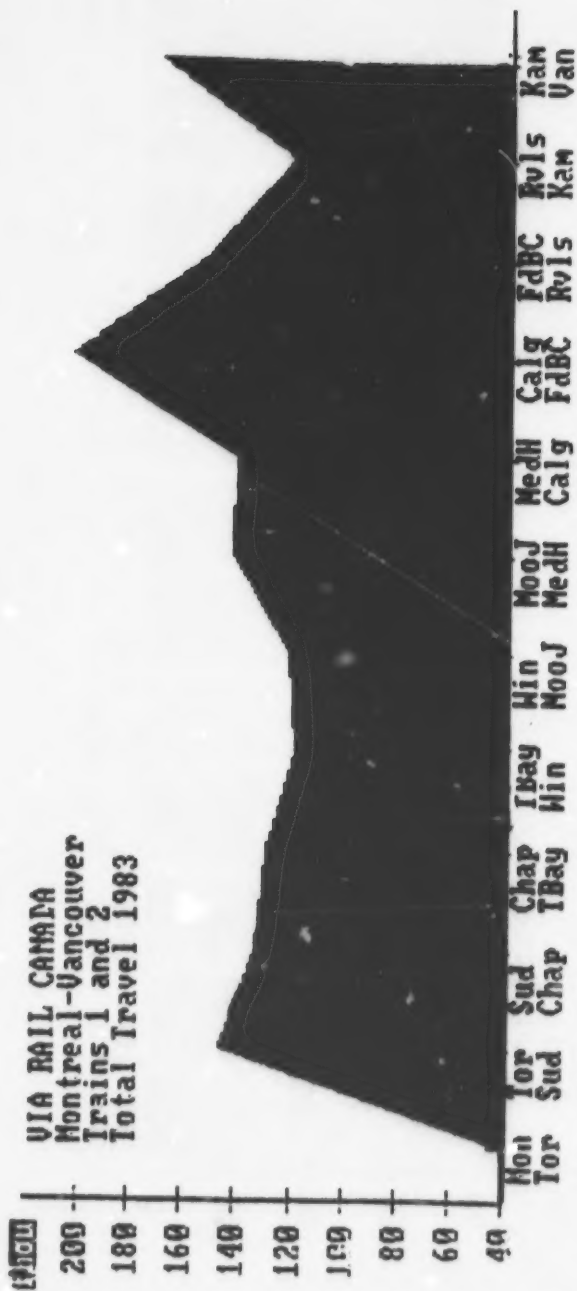
* Sum of costs for 2 cars - Diner and Skyline

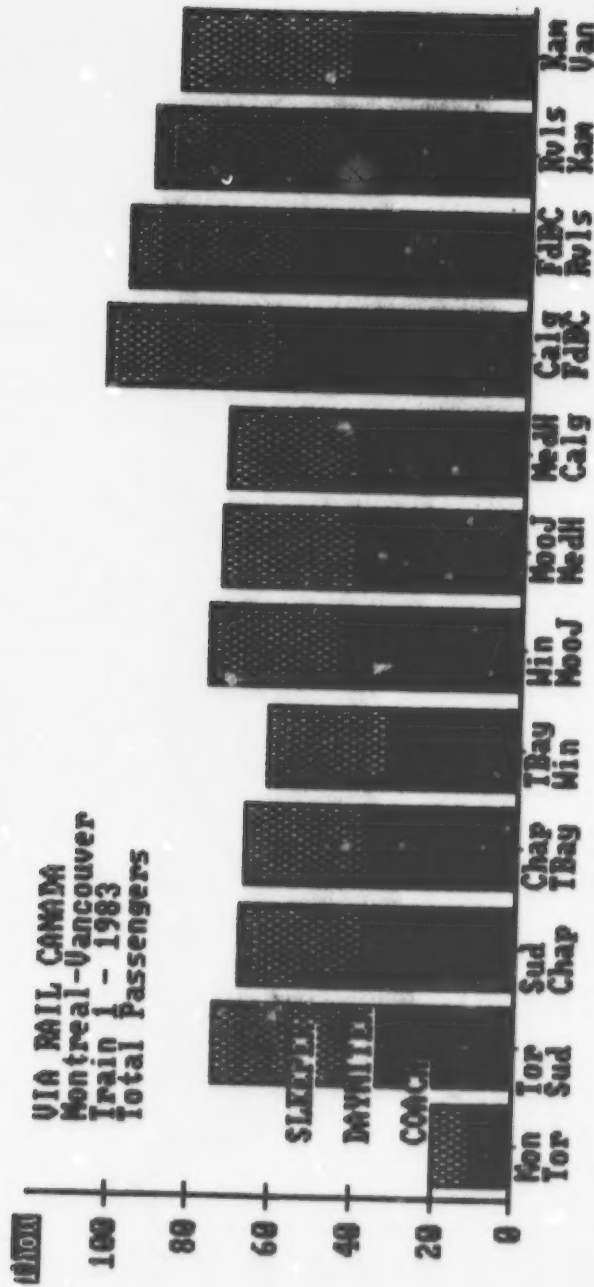
**Sum of OBS costs for 2 cars - Diner and Skyline

APPENDIX B

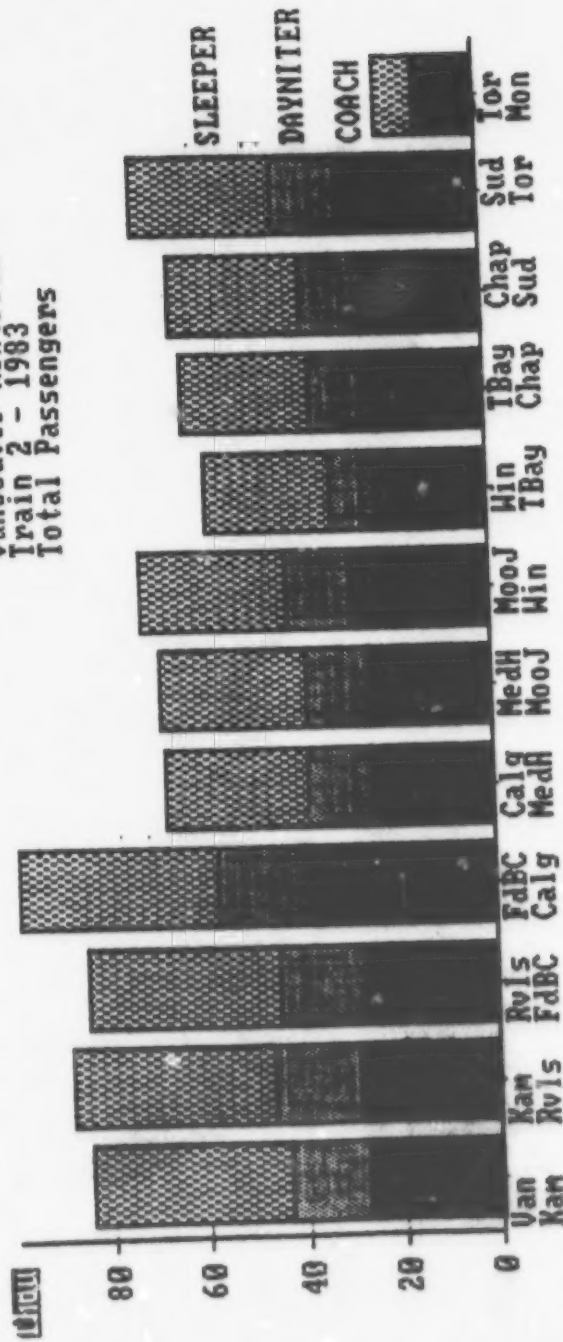
1983 WESTERN TRANSCONTINENTAL TRAFFIC CHARTS

**SOURCE: Estimated by Alberta Economic Development,
(based upon historically available data).**





VIA RAIL CANADA
Vancouver-Montreal
Train 2 - 1983
Total Passengers



VIA RAIL CANADA
 Montreal-Vancouver
 Train 1 and 2
 Peak Winter Shoulder
 Periods - 1983

1000

109

80

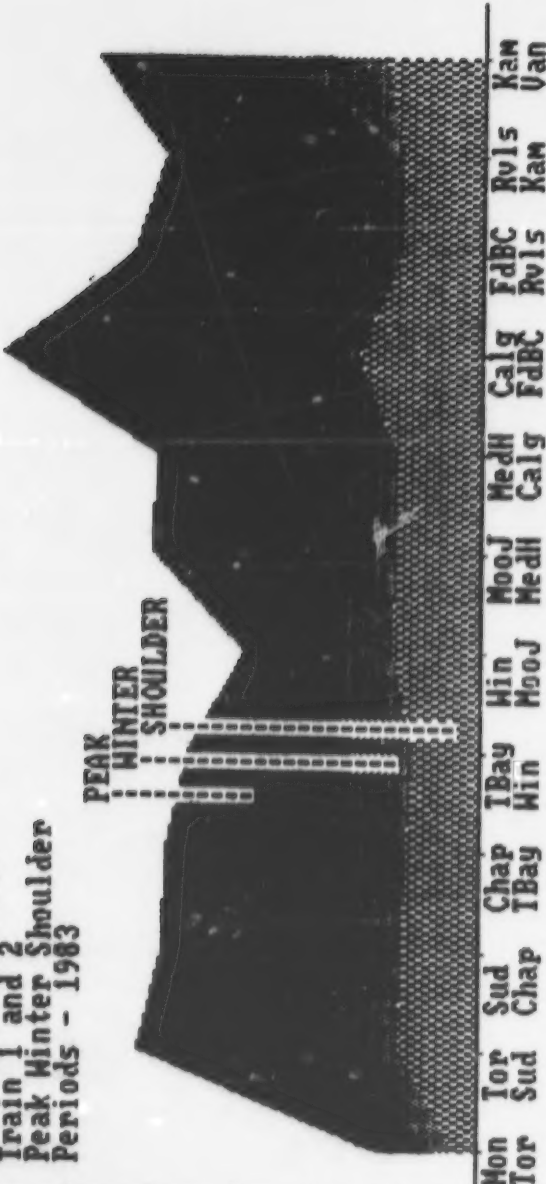
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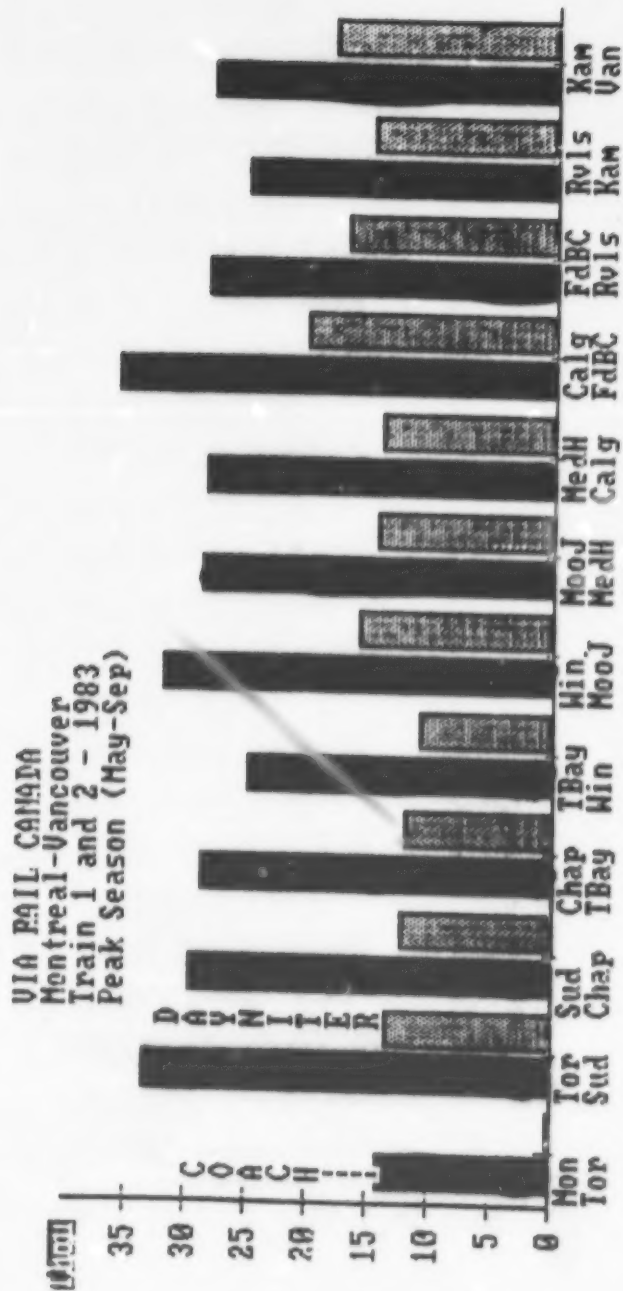
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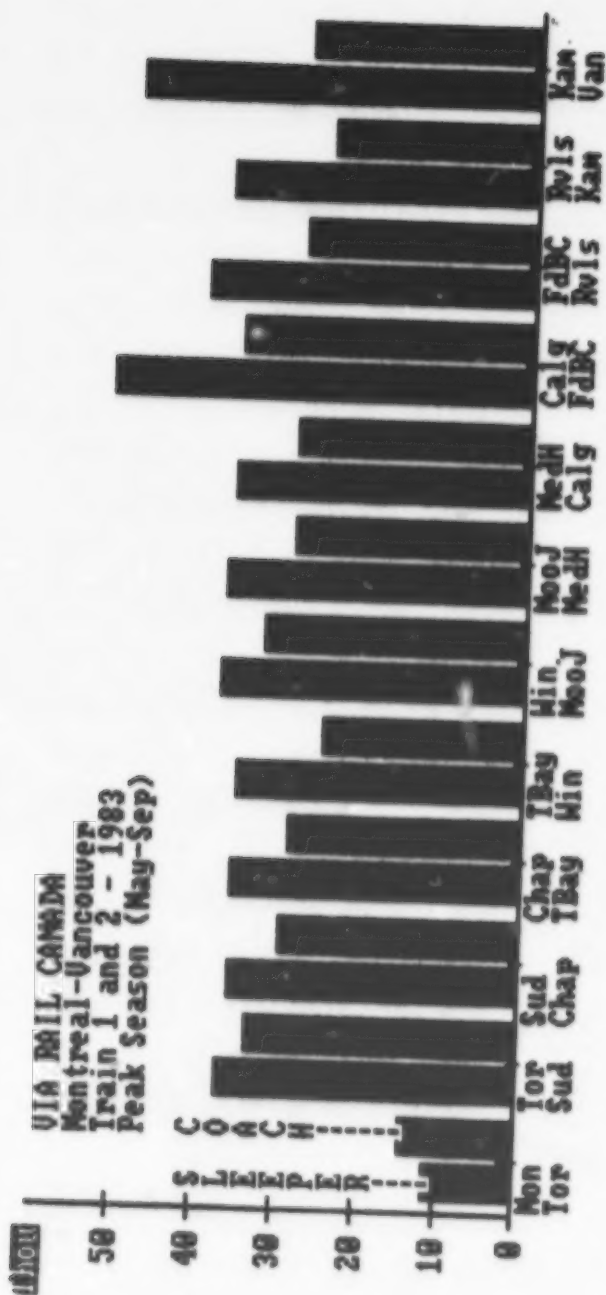
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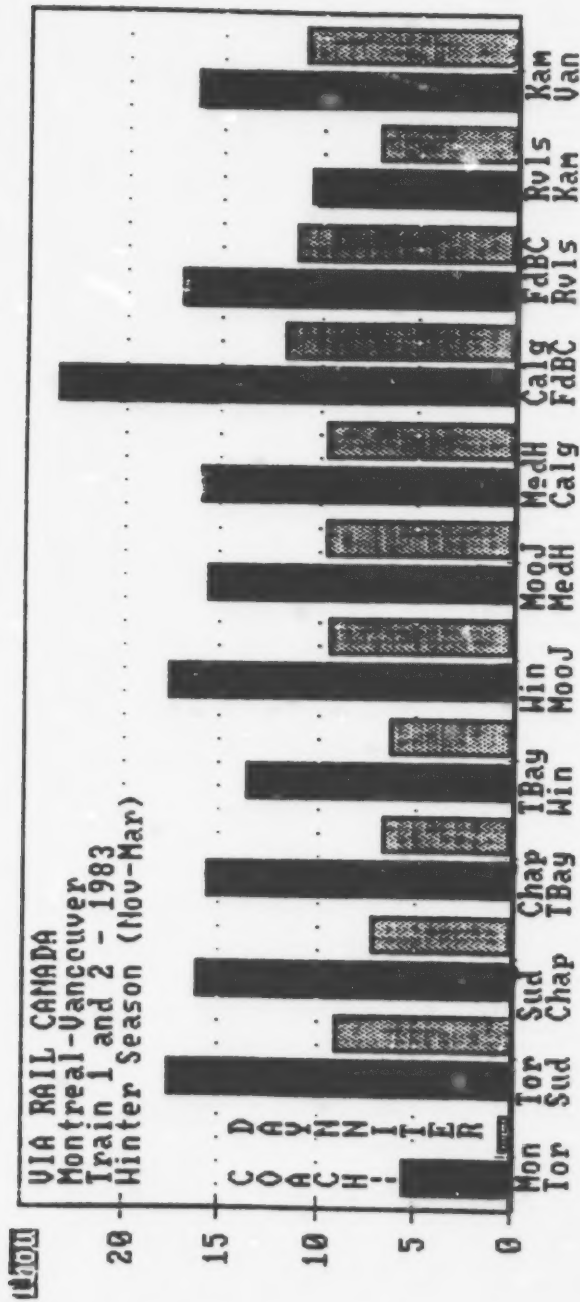
PEAK
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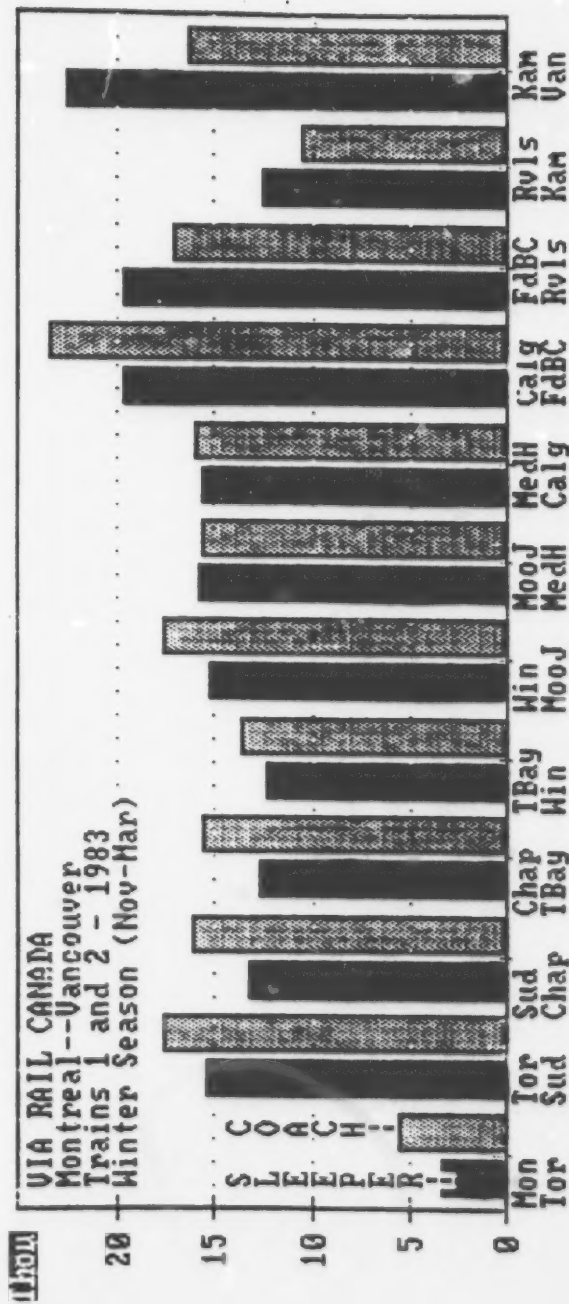


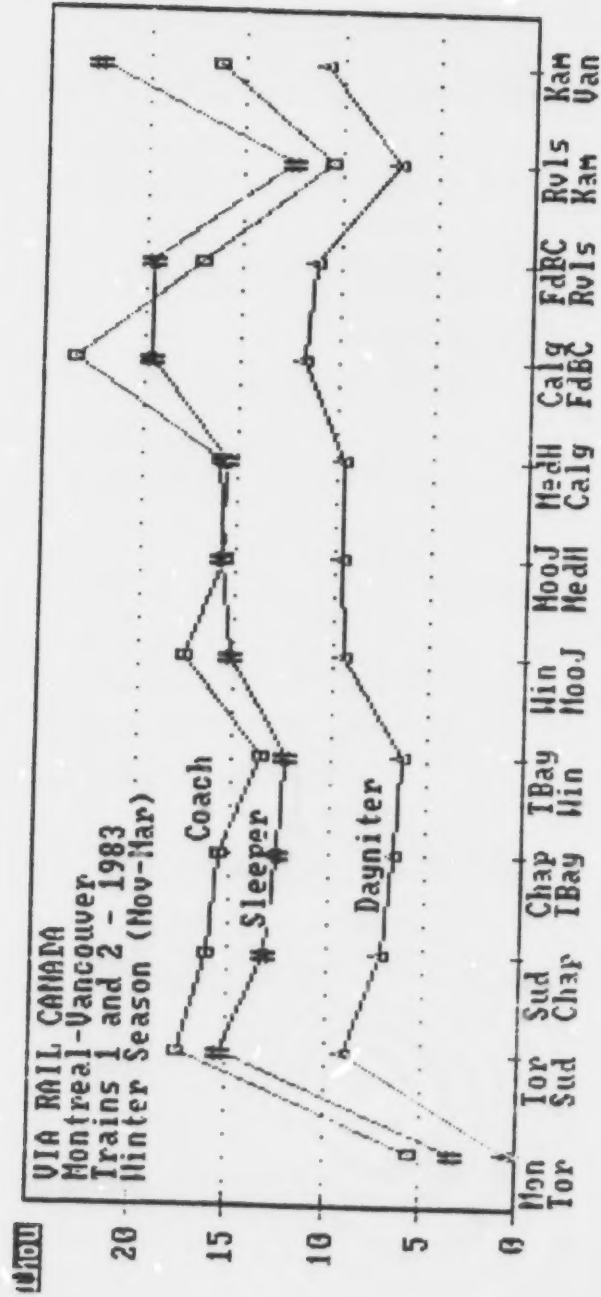
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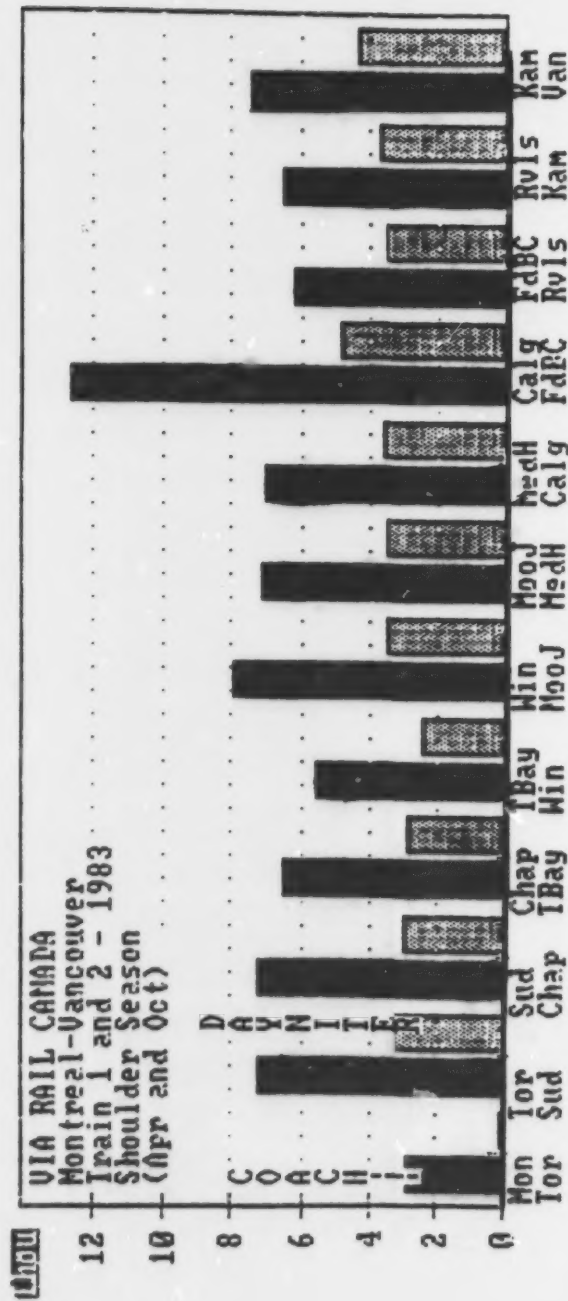


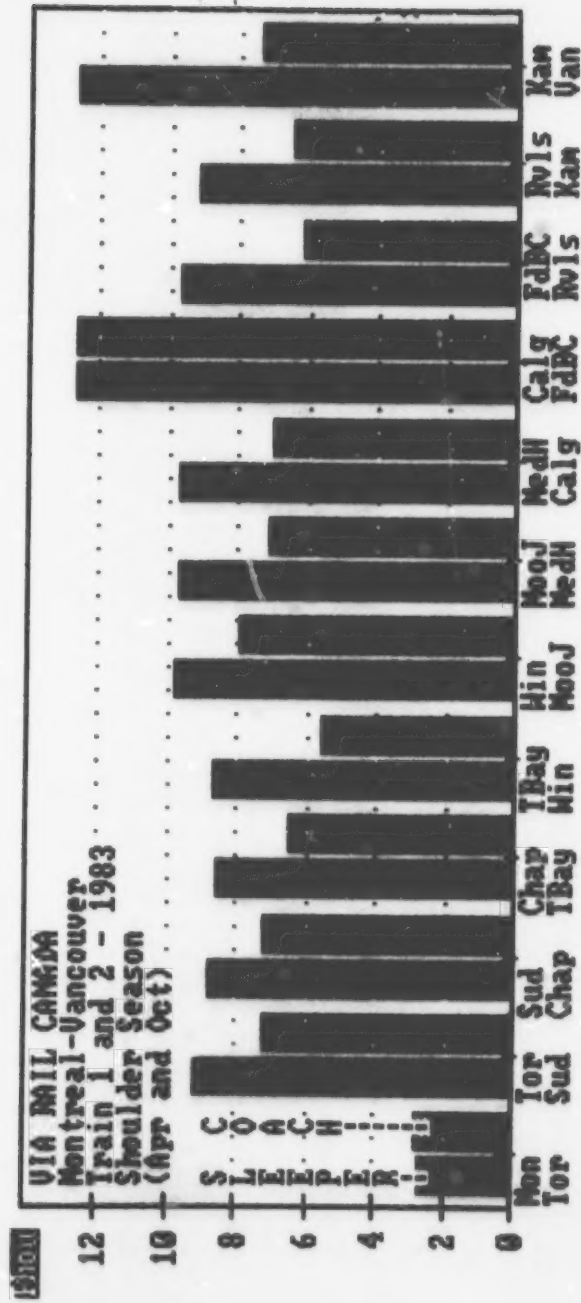


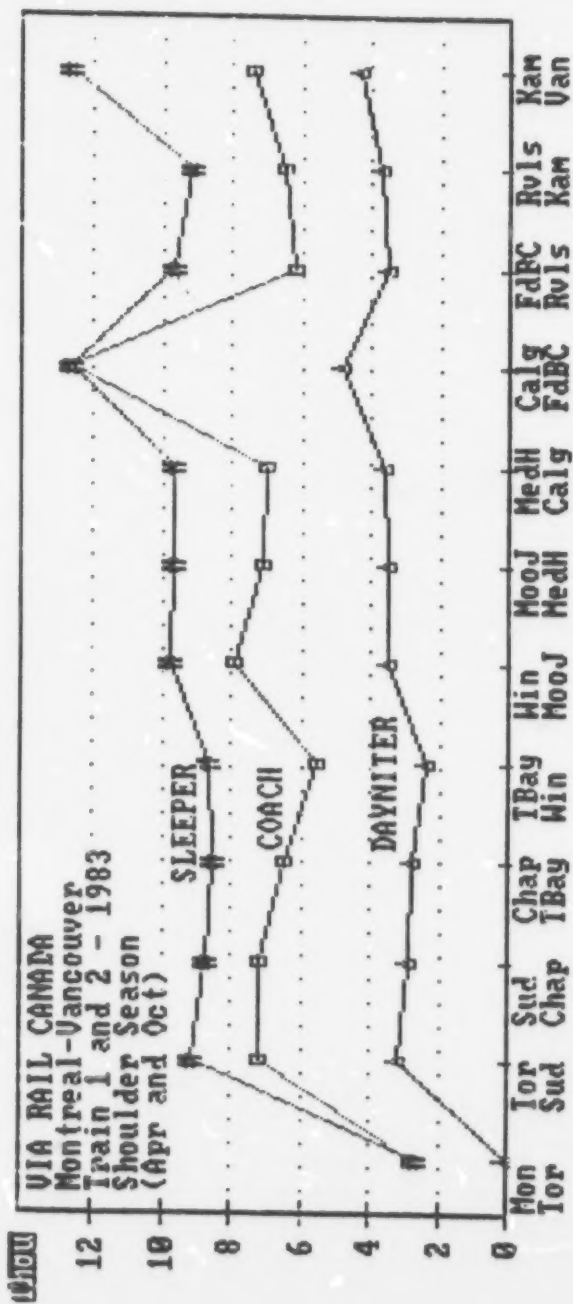












APPENDIX C

LIST OF INDIVIDUALS CONTACTED

LIST OF INDIVIDUALS CONTACTED

AMTRAK:

Mr. J. Barker
Mr. W. Cole
Mr. J. Considine
Mr. M. Laurello
Mrs. C. Marks
Mr. I. Silverman

GOVERNMENT OF CANADA:

Canadian Transport Commission -

Mr. J. Heads
Mr. K. Mozersky

Regional Industrial Expansion -

Mr. S. Bond
Mr. E. Cuyllits
Mr. D. Murison

Transport Canada -

Mr. F. McGuire
Mr. D. Oldford
Mr. L. Ranger
Mr. D. Smith
Mr. D. Welch

VIA RAIL CANADA INC:

Mr. R. Arnold
Mr. B. Coe
Mr. S. Del Bosco
Mr. J. Griffin
Mr. L. Harris
Mr. T. Hooper
Mrs. A. Kotler
Mr. T. Kyffin
Mr. M. Pancer
Mr. J. Roche
Mr. R. Spack

OTHER:

CN Rail -

Mr. H. Easton

CP Rail -

Mr. S. McFadzean

Tourism Industries Association of Canada -

Mr. G. Campbell

York University -

Dr. A. Cubukgil

Urban Transportation Development Corporation -

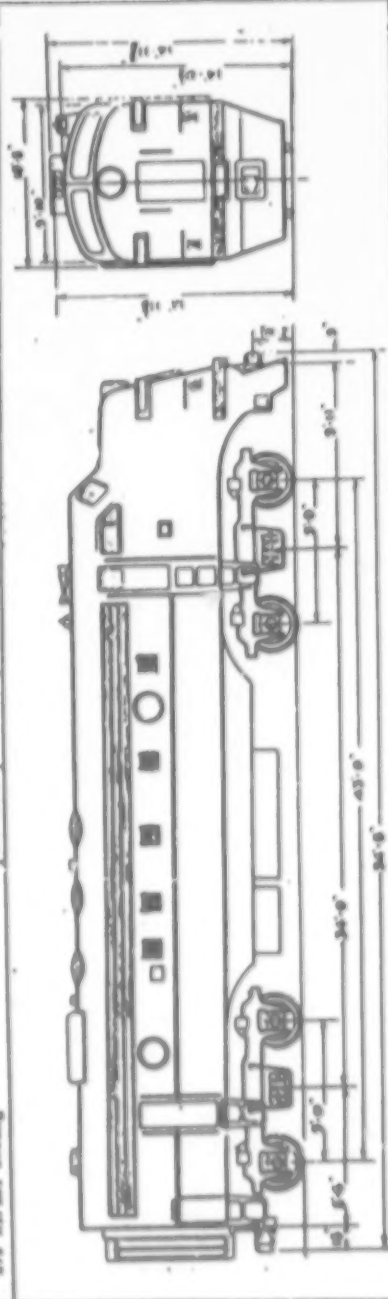
Mr. R. Roy

APPENDIX D

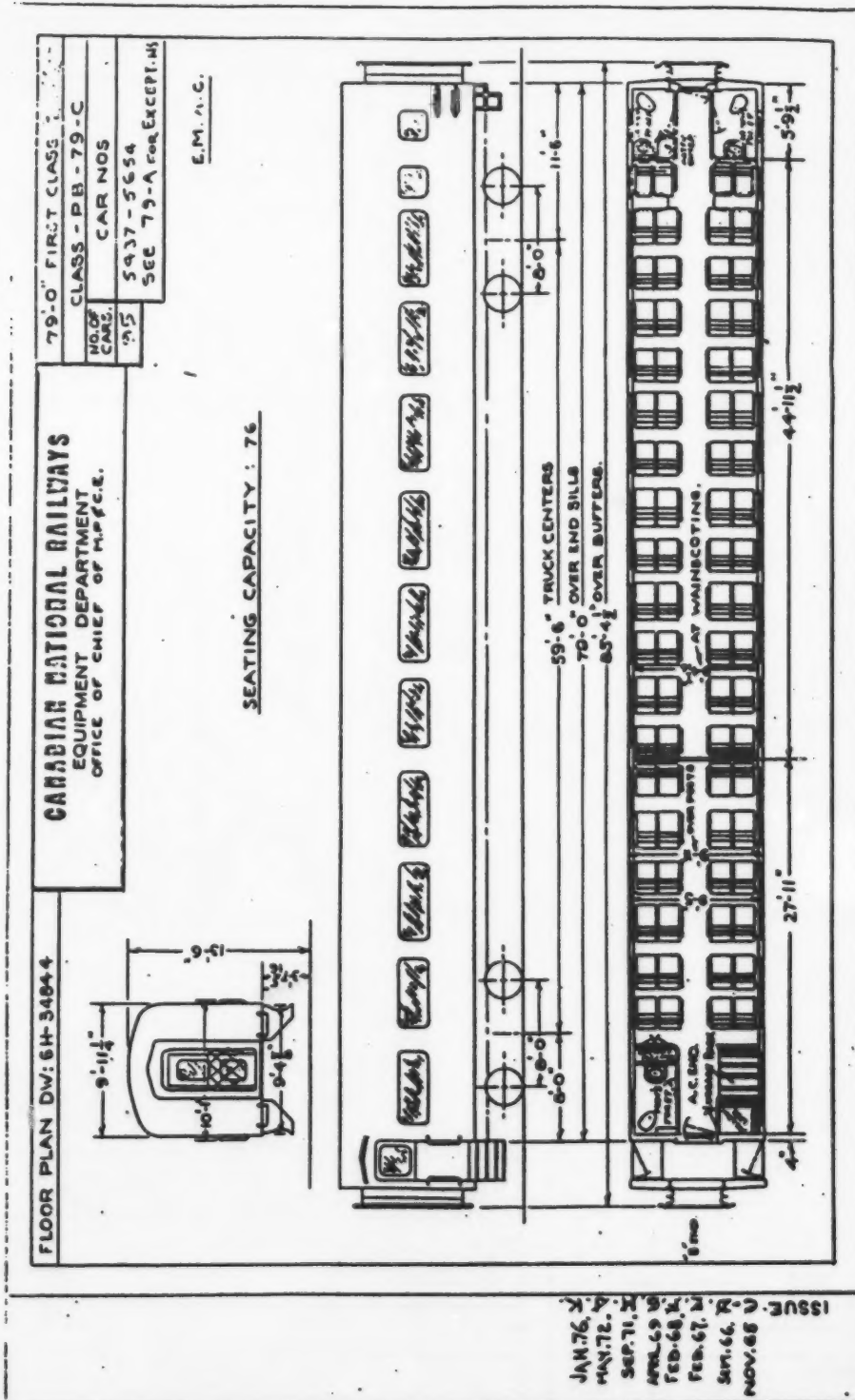
DETAILED EQUIPMENT LAYOUTS

11

MECHANICAL DEPARTMENT				DIESEL UNIT DATA BOOK				6500			
								GPA-175			
								CLUT			
								NUMBERS			
DESIGN ENGINE: 1750 E.P.				BUILDER				G.M.			
G.L. 607C 7-Cyl				ORDER N°				G-185			
16 Cylinder, 40" Bore, 30" Stroke				MODEL N°				P.P. 9A			
835 E.P. 2L Full speed				DATE BUILT				1954-1955			
275 E.P. 2L, 1411 kg											



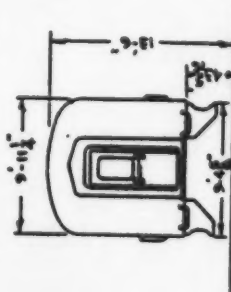
CAPACITIES				WHEELS: TYPE & CLASS		STEAM GENERATOR		ELECTRICAL		EQUIPMENT	
TANK COOLING WATER				A-60		GMC - 10-100 CE-4825		TRACTION MOTORS		SUMMARY GEN: TYPE & No	
LUBRICATING OIL				A-60		AIR COMPRESSOR		G.M. 2-37		Delco or Trumper	
FUEL OIL				A-60		Grinder Drifter		: 20-100		18 KW 74V 2-60	
LUBR. STORAGE				A-60		COOLING PUMPS		T.M. BLOWER MOTORS		ALTERNATOR: TYPE & No	
STEAM GEN. WATER				A-60		PUMPS - Bellows 1-2777		Bellows A.C.		G.M. 2-36	
				A-60		AIR BLOWER		3 Phase Distribution		MAX. CAPACITY	
				A-60		Shuttlowhouse 24 SL		G.M. 1-22		PUMPING 20-100	
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FLOOR PLAN - 6H-36775

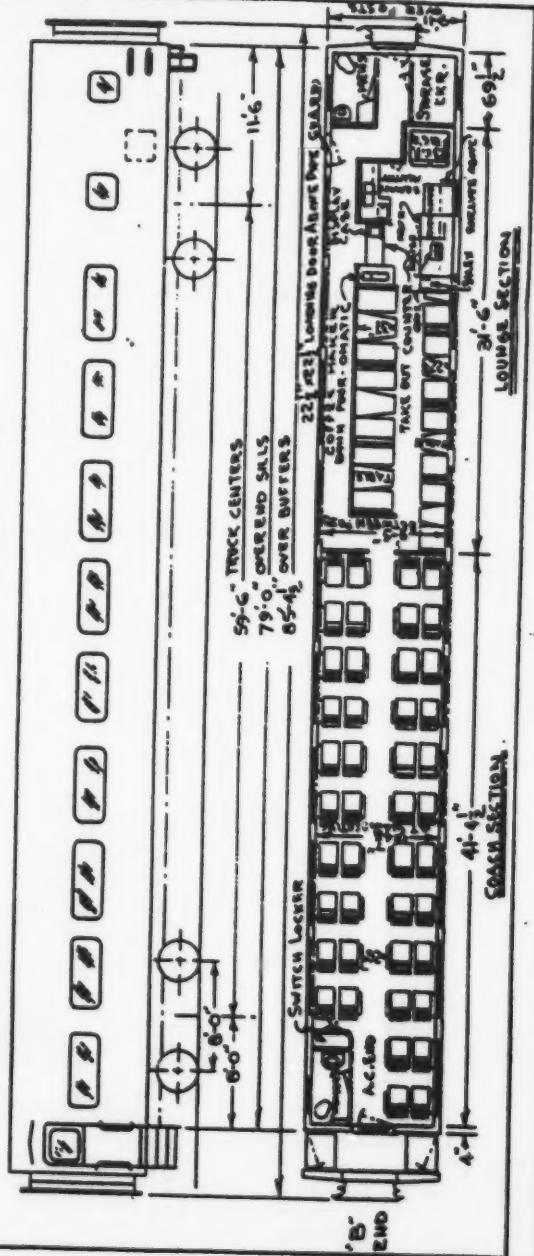
CANADIAN NATIONAL RAILWAYS
EQUIPMENT DEPARTMENT
CHIEF OF M.P. & C.E.



79'0" COACH LOUNGE CAR	
CLASS - PB-79-D-1	
CAR NO.	CAR NOS.
9	3024, 330, 32, 33, 34
	3035, 37, 38, 33

EMAC.

SEATING CAPACITY:
COACH SECTION = 44
LOUNGE = 19
TOTAL = 63



Dec-76 19
FEB-76 14
MAY-72 14
JUN-71 8
JUNE 70 1
JAN-69 4
ISSUE: 3

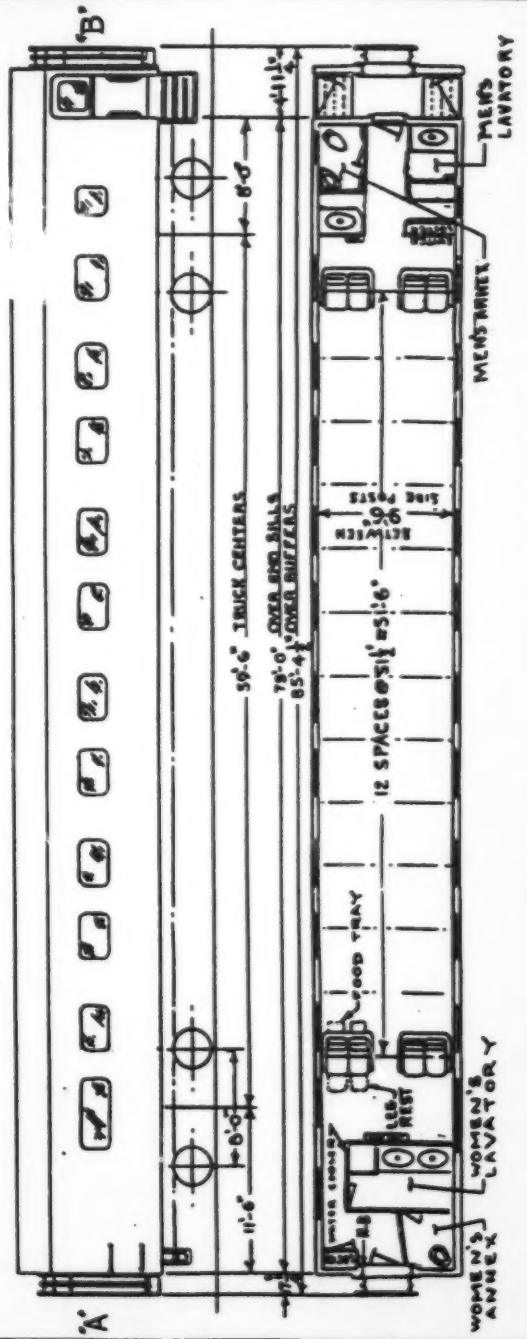
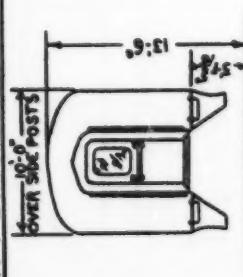
79'0" DAYNITER CORCH	
CLASS: PB-79-J	
# OF CARS	CAR NOS
6	5726-5731

CANADIAN NATIONAL RAILWAYS
EQUIPMENT DEPARTMENT
CHIEF OF M.P. & C.E.

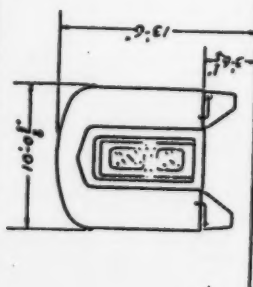
EM. AC

SEATING CAPACITY: 52

FLOOR PLAN: 6H-39770



FLORIAN DIV. CH-31681



CANADIAN NATIONAL RAILWAYS
MECHANICAL DEPARTMENT
MONTREAL

79'2" SLEEPING CAR

CLASS:- PS-79-C

NO OF CARS	CAR NOS.
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
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1110-1161

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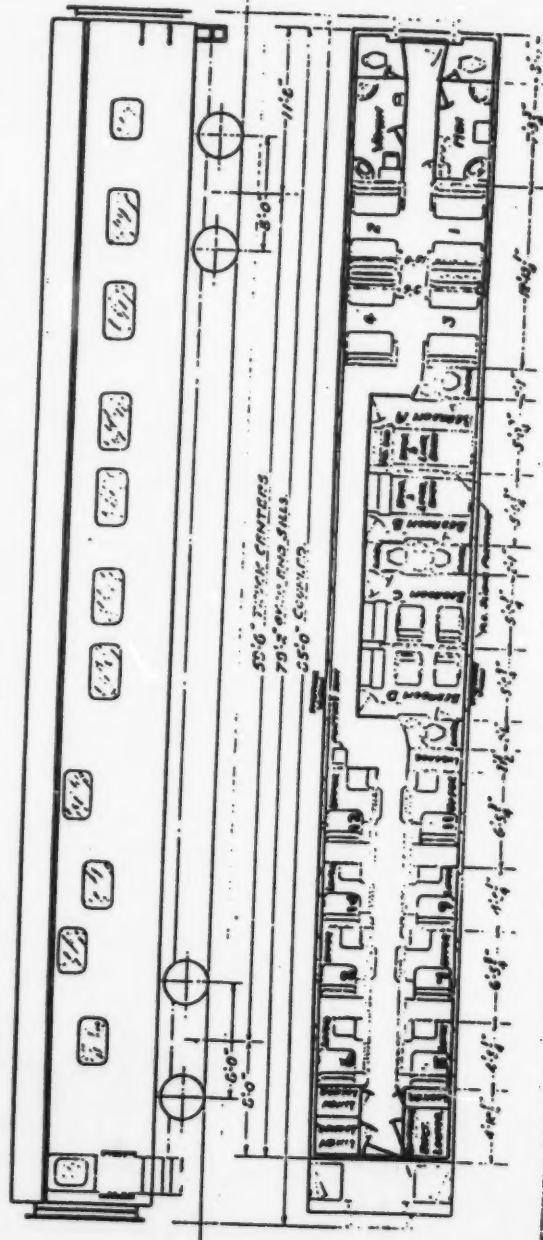
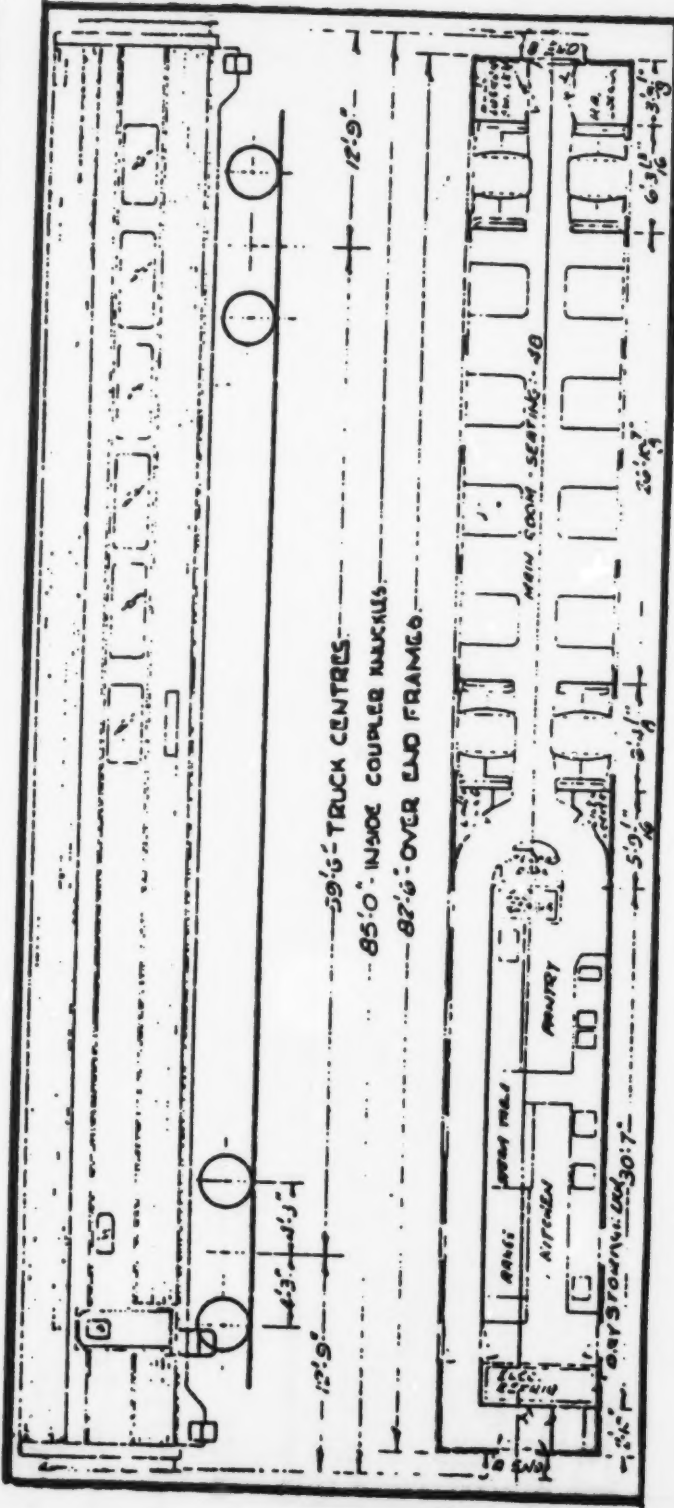


Fig. 9.

ITEM _____ TYPE _____ Diner _____ SERIES _____ 16501-16518



Air Conditioning

Electric System 110V

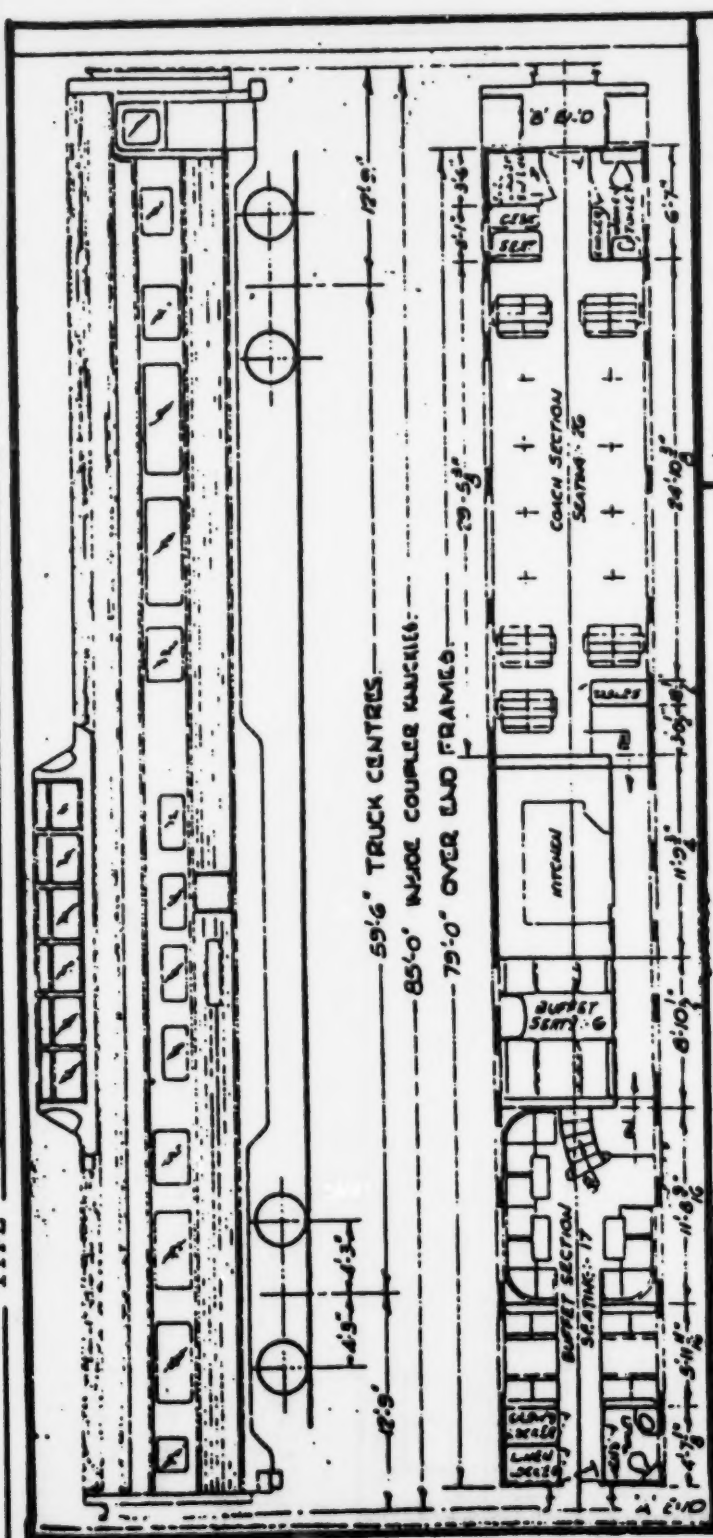
Wheels and Trucks

Exterior Finish
Stainless Steel

Year Built	1955	Modernized

Weight 68 tons.

ITEM _____ TYPE Skyline Coach-Coffee Shop Observation Dome SERIES 500-517



Air Conditioning _____ Electro Mechanical _____

Electric System _____ 110V _____

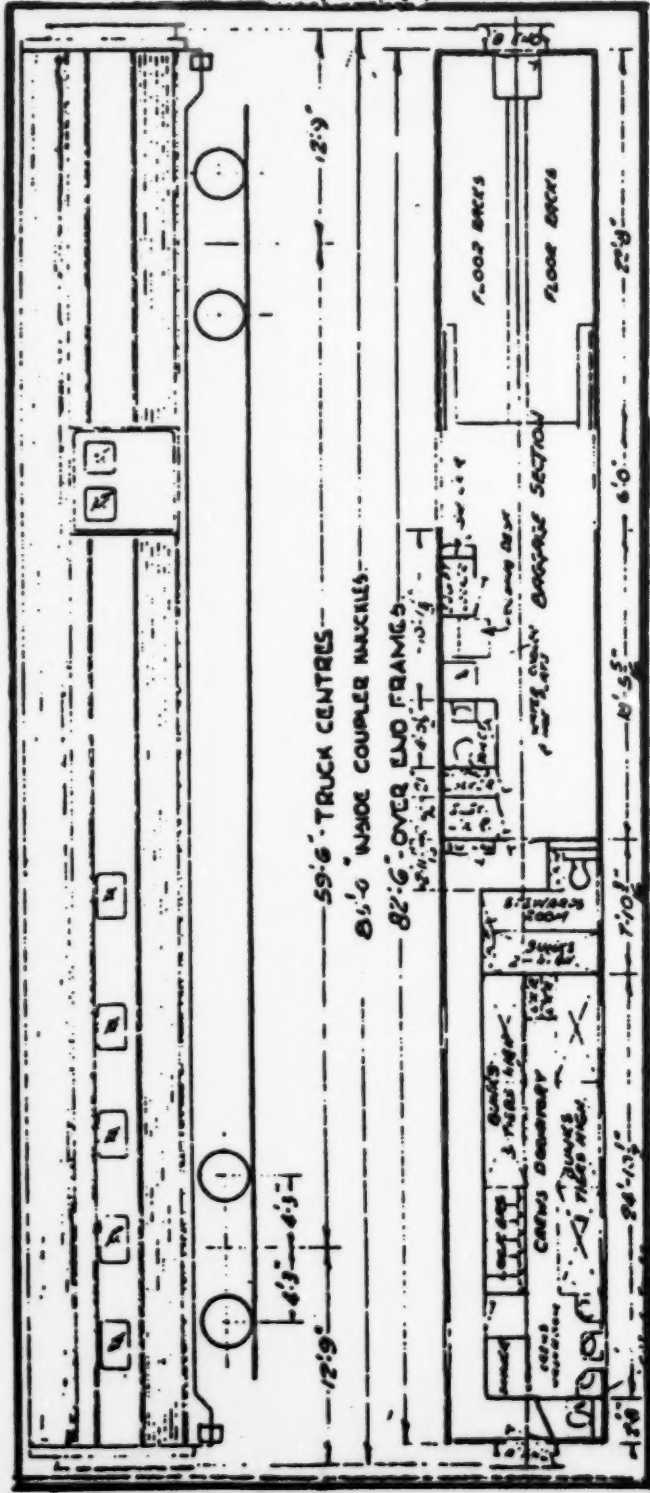
Wheels and Trucks _____ 4 wheels outside swinghanger - Disc Brakes

Exterior Finish _____ Stainless Steel _____

Year Built 1954-55 _____ Modernized _____

Weight _____ 73 _____ tons.

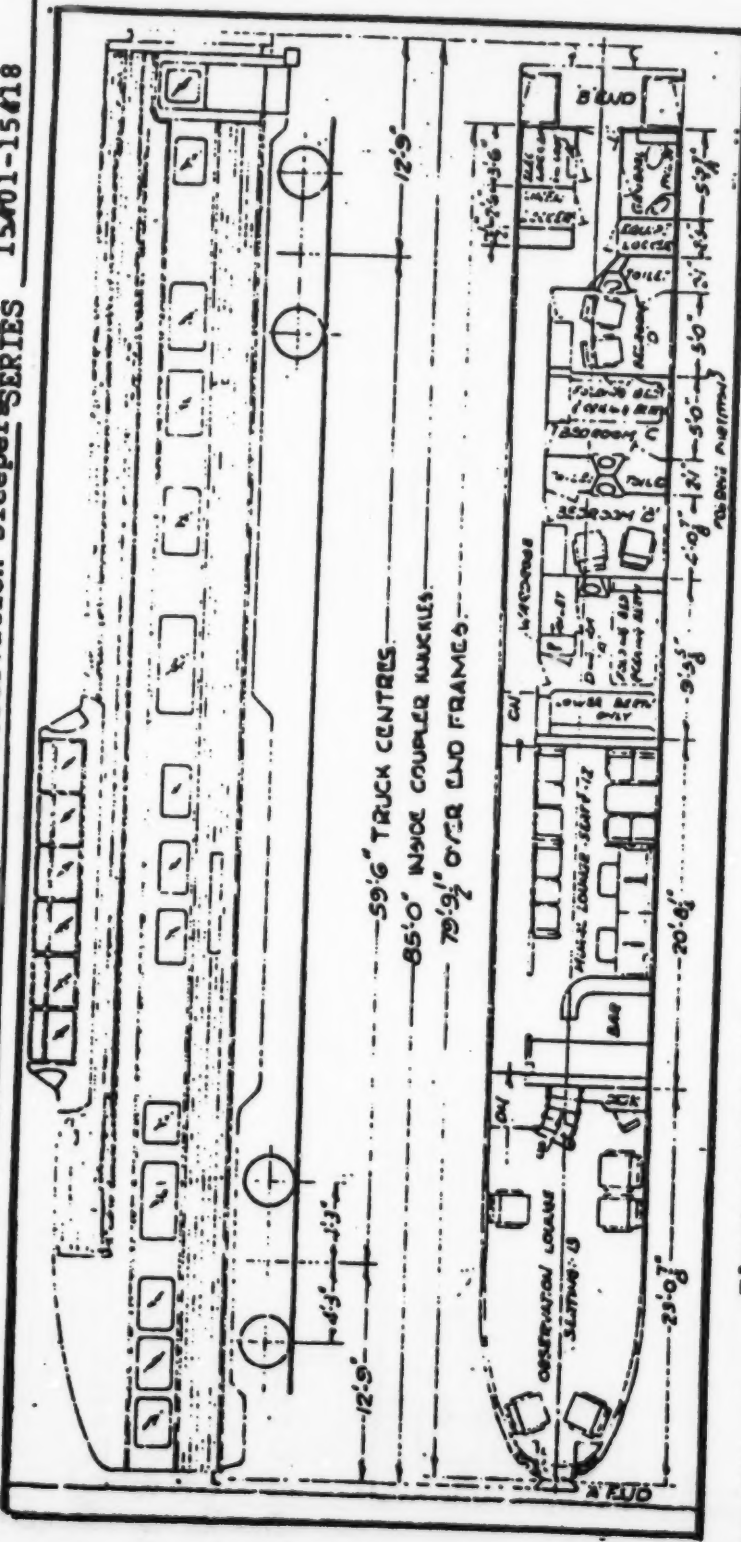
ITEM _____ TYPE _____ Baggage _____ SERIES 600-617



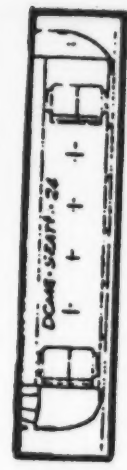
CARS CONVERTED TO BAGGAGE ONLY

Air Conditioning _____ Electro Mechanical _____
 Electric System _____ 110V _____
 Wheels and Trucks _____ 4 wheels outside swinghanger - Disc brakes
 Exterior Finish _____ Stainless Steel _____
 Year Built 1954-55 Modernized _____
 Weight 60 _____ tons.

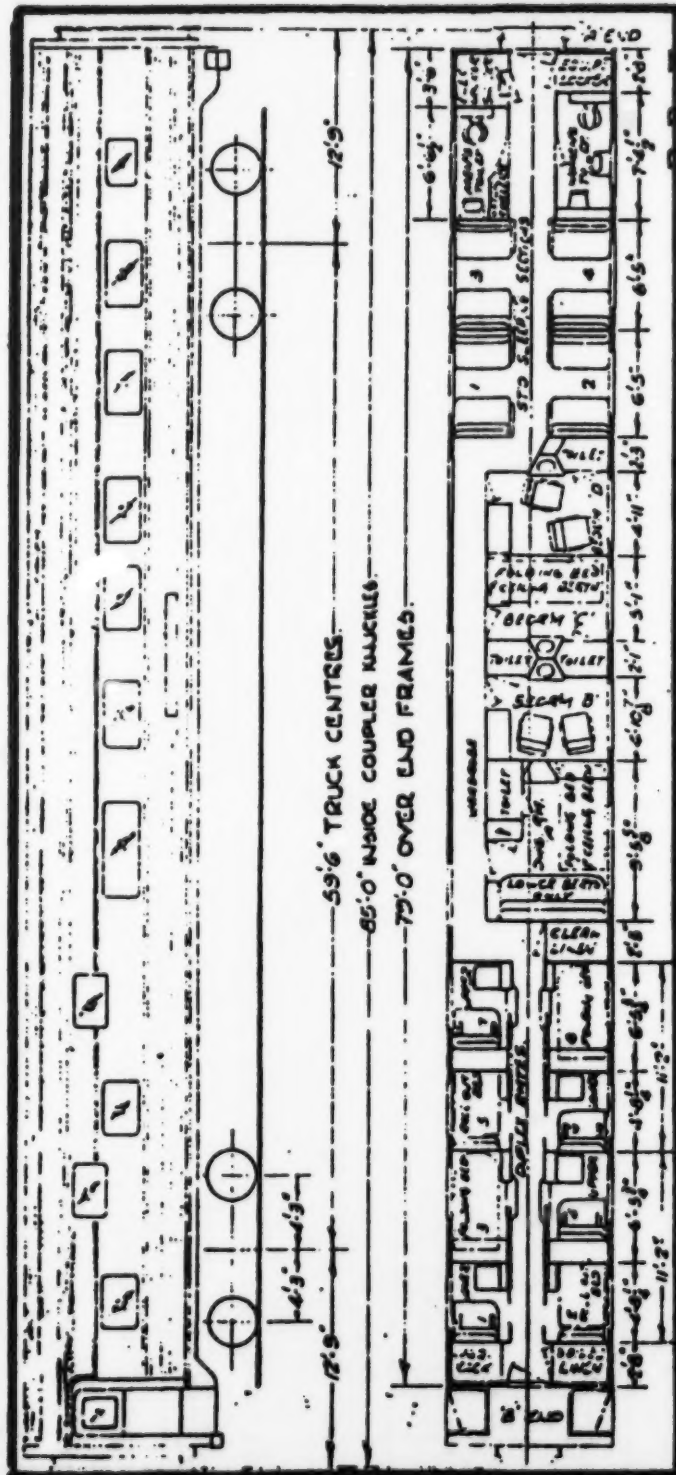
ITEM _____ TYPE 3 BDR 1 Compt - Dome Observation Sleepers SERIES 15401-15418



Air Conditioning _____ Electro Mechanical _____ "PARK"
 Electric System 110V
 Wheels and Trucks 4 wheels outside swinghanger-Disc Brakes
 Exterior Finish Stainless Steel
 Year Built 1954 Modernized -
 Weight 73 tons.



ITEM _____ TYPE _____ 4 Sec 8 Rmtte 3 DBR 1 Drawing Room SERIES 14401-14229



"CHATEAU" SLEEPER

Air Conditioning _____ Electro Mechanical _____

Electric System _____ 110V _____

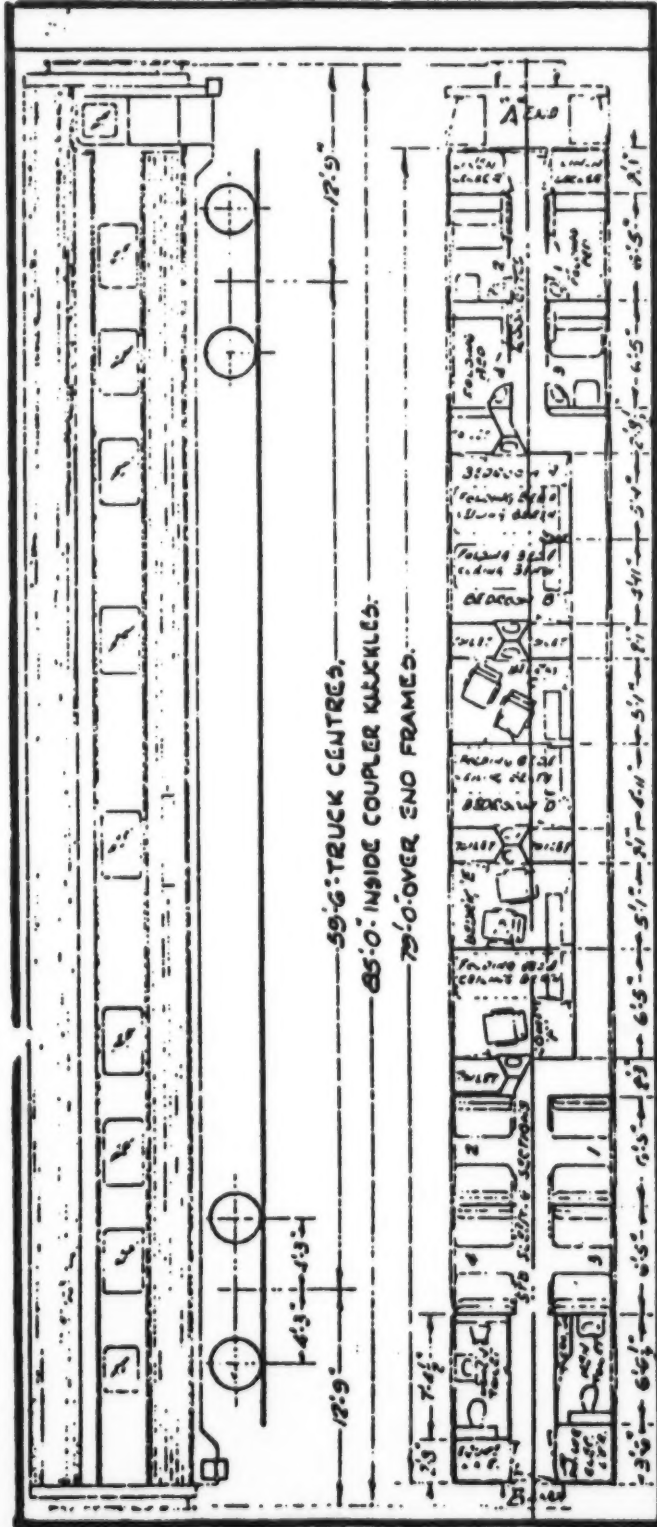
Wheels and Trucks 4 wheels outside swinghanger - Disc Brakes

Exterior Finish _____ SS _____

Year Built 1954 Modernized _____

Weight 69 _____ tons.

ITEM _____ TYPE 4 Sec 4 Rmtte 5 DBR 1 Compt SERIES 14301-14342



"MANOR" SLEEPER

Air Conditioning _____ Electro Mechanical _____
 Electric System _____ 110V _____
 Wheels and Trucks _____ 4 wheels swinghanger - Disc Brakes
 Exterior Finish _____ SS _____
 Year Built 1954-55 Modernized _____
 Weight _____ 69 _____ tons.

APPENDIX E

MINISTER OF TRANSPORT'S PRESS RELEASE



Minister
of Transport

Ministre
des Transports

INFORMATION

No. 185/84

For release
July 6, 1984

WINNIPEG - Transport Minister Lloyd Axworthy announced today that VIA Rail would lease a "Superliner" trainset from the U.S. Amtrak to test its suitability in Canadian operating conditions.

Superliners will be used on the Panorama service between Winnipeg and Edmonton from Sept. 15 to Dec. 1, 1984, and from Jan. 1 to Easter, 1985 on an experimental basis.

"This evaluation," said Mr. Axworthy, "is one more component in my on-going commitment to provide Canadians with access to better rail service."

The Superliners, delivered to Amtrak in 1981, were the first passenger cars intended for long-haul service to be built in the U.S. in more than 20 years. The tall, bi-level (two-storey) cars in stainless steel, which replaced dated rolling stock, have done much to enhance Amtrak's track record. Modular design has made maintenance easier and reliability has improved. Coach passengers ride in comfort in aircraft-style seating arrangements. Extensive use of interior fabrics help deaden sound.

The Superliner trainset to be leased by VIA will consist of a locomotive, a coach, a baggage coach, a 44-berth sleeper and a dining car.

The experiment will take place concurrently with a prototype development program to evaluate options for equipping transcontinental trains.

.../2

The bi-level passenger cars carry more people and reduce the size of the train. This combination would result in cost savings to VIA of about \$50 million a year should the Superliner be introduced to trans-continental service.

"Introduction of the Superliners would provide Canadian travellers with a more efficient train service and determine if such a service would be feasible on a permanent basis," Mr. Axworthy said.

Contact: Pat Preston
Minister's Office
(613) 996-7501

SUPERLINER FACT SHEET

- . The Antrak fleet includes coaches, sleeping cars, dining cars, lounge-cafe cars and coach baggage cars. Each is of bi-level design with high level passage ways connecting the cars at the upper deck level. Entrance is through a lower level door with a central stairway to the upper deck.
- . The long distance coaches seat 62 on the upper level and 13 on the lower level. Some low level seats are intended for use by the handicapped and have wide-aisle access, leg, foot and arm rests as well as rotating and reclining features. Some cars have specially equipped rest rooms for the handicapped and are fitted with wheelchair boarding ramps.
- . Sleeping cars can accommodate 44 passengers. Each car has 14 two-berth economy rooms, five first class deluxe bedrooms with showers, one four-passenger family room and a two-berth room for handicapped passengers.
- . Tinted glass windows are equipped with adjustable shades and overhead reading lights and attendant call buttons are provided.
- . Fabric in brown, beige, rust and yellow is used extensively in the car interiors and helps to control noise.
- . Baggage can be carried in the overhead racks or in a lower-level storage bin at the foot of the steps.
- . The cars are constructed using modular design techniques sharing a common body. Seating is modular also and can be re-arranged to suit differing functions such as coach/baggage or lounge/cafe.

- . Material used in the Superliner exteriors is stainless steel, and modular design is said to have improved reliability while making maintenance easier.
- . The Superliner trainset has all electric air conditioning, heating and lighting derived from 'head-end' power provided by the locomotive.

APPENDIX F

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REFERENCES

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